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COMPUTER WEEKLY

Bargain hunters off to early start

HOPING to pick up four computers for less than £300, Roger and Gary Cobb from Portsmouth (on the left of our picture) queued for two nights at Electronic Brokers' once-a-year sale in Pancras Road, London, last weekend. Their objective: secondhand Digital Equipment PDP-8s selling at bargain prices from £25 to £75 each.

The sale of computer and test equipment, which continues until next Saturday, May 26, is Electronic Brokers' only contact with the general public. The firm normally deals only with industrial and commercial users.

Other bargains on offer included a Varian computer at £10, Hazeltine 200 VDUs at £250 and Teletypes at £195. Managing director Peter Fraiman expected the warehouse-full of stock to be completely cleared within the week.

Roger and Gary, who work for Marconi Space and Defence and Southern Microwave respectively, plan to use their purchases to pursue extension of their professional work in their spare time. They were also buying for friends.

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NEWS IN BRIEF

Strike stops System X

DEVELOPMENT work on the Post Office's System X digital telephone network ground to a total halt last week as members of the Society of Civil and Public Servants stopped project operations at Derby — the main System X centre.

This action could increase the pressure on the Post Office to meet union pay and parity demands as action at Harmondsworth, another System X centre, continues. The Post Office's main engineering supplies depot in Scotland has been shut down by SCPS action too.

War games . . .

COMPUTER models of Army operations involving the Royal Corps of Transport, the Royal Army Ordnance Corps and the Royal Electrical and Mechanical Engineers are developed by Ensams, part of the GEC-Marconi group. Easams will also develop a stylised war model for use by military officers in testing logistics plans.

Green light

A COMPUTER controlled traffic system valued at £1 million, that was delayed by the liquidation of the firm supplying closed circuit television equipment (CW, February 22), is now operating in Leeds and parts of Brodford. The rest of the order is now out to tender again.

Training grants

THE Engineering Industry Training Board has introduced a programme for training engineering workers in computers and microelectronics. Grants of up to £70 a worker a week are available for approved training courses.

Greece signs up with seven UK software firms

THE British troika of the Computing Services Association in harness with the Department of Industry and the Central Computer Agency has scored its first success in selling the skills of the UK software and services industry to a foreign government.

The government is that of Greece, whose Finance Ministry has signed contracts worth over £450,000 with seven British companies for consultancy and software design.

CSA director general Alan Benjamin confirmed to Computer Weekly that the contracts were the first success so far for the new policy, and described the help given by the DoI and the CCA as "very very helpful." He was confident that the change of government would make no difference to the approach or to DoI support.

Other countries identified as prospects for the troika are Sudan, Zambia, and Bahrain, but the other country where a concerted effort has already been made, Mexico, has proved disappointingly slow.

"The Minister we have been talking with has just been changed, so it is going to take longer than we had hoped. But having made extensive contacts there we are not going to give up. We are now tackling the private sector, and are not having to start from scratch, because many of the banks are 50% State-owned, and we have already met some of the representatives. Mexico will take time, but we will succeed," he said.

With limited resources, the CSA cannot tackle every likely prospect simultaneously, but once the second round of contracts is signed in Greece, the troika will move on to the next prospect. CSA members interested in participating contribute a small amount of money to cover the cost of the programme, while DoI and CCA endorsement are particularly valuable when dealing at government level.

The CSA members involved in Greece are Pactel, Price Waterhouse, Software Sciences, Dataskill, Scicon, BIS Applied Systems and Allergo.

The Finance Ministry is seeking to upgrade its computer systems on a broad front.

WP text conversion simplified

CONVERSION of text from one word processing medium to another, often a problem when introducing new equipment, is made easier by an ancillary system introduced by UDS.

Called the CX Co-ordinator, it consists of a box with two microprocessors and twin floppy discs that can be interfaced to a range of peripherals such as paper tape reader/punches, OCR machines, and communication links.

Documents from various media can be converted to floppy discs for use on the UDS/Ricoh C Text word processor, which is a single-line display model. Software for each different medium and data format is loaded into the Co-ordinator from floppy disc. The Co-ordinator is operated from an ordinary VDU.

Printers can also be connected to the Co-ordinator and this enables a printer to be shared between several keystations, often an economical scheme because printing is faster than keying.

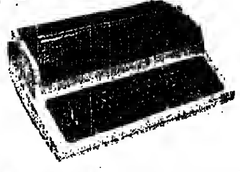
GEC lifts threat to strikers

A THREAT by GEC management to suspend striking development engineers not working normally by the beginning of this week at two Coventry works (CW, May 17), has been lifted pending further talks between the Association of Scientific, Technical and Managerial Staff, and the company.

Strike action, which was affecting System X development work has been suspended for a month while the new talks proceed, but there has been a union warning that action will resume if "no fruitful conclusions are reached within that time."

About 450 development engineers are involved in the dispute which relates to a general pay claim for over 1,000 technical workers and a specific restructuring of the development engineer grading system.

In a seperate dispute, about 80 TXE 4 commissioning engineers who were striking for the implementation of a 5% Central Arbitration Council award, which the company says was incorporated in a new grading structure, have been suspended for not working properly. They are also ASTMS members.

NEW

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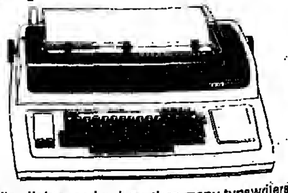
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Mostek to sell IBM add-ons

A RANGE of add-on memory systems for IBM mainframes is to be introduced by Mostek even though the existing suppliers have been scared recently by IBM's 30% cut in its own add-on memory price to $50,000 per Megabyte.

Mostek will be marketing the systems specifically at the OEM market, rather than end users. So pricing details are not available. They are unlikely, however, to be much different from those charged by another company in the market, Intel. This markets to the end user at $50,000 per Megabyte.

The Mostek range consists of four systems aimed at different models in the IBM range. Model 831 is intended for the IBM 303X system, and offers a maximum of 8 Mbytes. Models 832, 833 and 808, for the 3032, 3033 and 370/168 mainframes respectively, each offer up to 16M byte capacity.

All four make use of 16K bit dynamic random access memories produced by Mostek which the company claims should give it an advantage over its main competitor in the add-on market, Intersil. Although a semiconductor manufacturer, Intersil is expected to have to purchase 16K chips on the open market.

Intel's system uses 4K bit static memories, and it has no plans to move to 16K chips on the

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FERRANTI

Briefing

IBM plan for viewdata

A PRIVATE viewdata system is believed to be under development at IBM which would compete with the offerings from companies like GEC, Philips and Thorn (CW, April 26). The company will say nothing about it and it is uncertain which computer is being used; the most suitable would be the new 8100 Information Processing System, but Series 1 is also a possibility.

Meanwhile, prototypes of "intelligent" TV sets incorporating an Intel 8085 or Motorola 6800 microcomputer are under test at GEC, and the company hopes to launch a product next year. The viewdata-compatible colour TV with 48K byte microcomputer and keyboard costing about £750 could be enhanced with storage and hard-copy peripherals for another £1,500 or so.

Apple prices down

APPLE Computers in the US has dropped the prices of its 32K byte and 48K byte systems following the continued decline in the price of memory components. The price of the 32K system is now $1,345, while the 48K is $1,486. In addition a 16K byte RAM increment comes down to $160, nearly halving the price.

3,000 more places

FUNDING of £11 million is being provided by the Manpower Services Commission for a three-year programme to establish 2,500 to 3,000 new computer training places at colleges and polys, and under the TOPS and Threshold schemes. Three new types of courses will be offered: Initial Programming, Real Time Programming, and Systems Analysis.

US firm for Eire

UNCONFIRMED reports indicate that a leading US computer peripherals manufacturer is to set up a factory in Ireland, under the auspices of the Irish Development Authority. The IDA says that it is talking to many US companies "and negotiating with some."

Dry method

A COMPLETELY dry method of processing integrated circuit wafers that could lead to even lower device costs through reduced manufacturing and capital equipment costs, has been developed by Motorola. Called Plasma Development Reactant (PDP) it eliminates all the wet processing stages in IC manufacture, which include the use of deionised water, petroleum-based solvents, and acids, as well as reducing potential environmental hazards.

Fast chips wanted

IBM has invited bids for 16 million fast 16K memory chips from the US semiconductor industry. It is believed to want the chips for the forthcoming top-end 3-series machines and the first 4-series machines. IBM's own 16K chip on the 4331 and 4341 is comparatively slow.

CW sponsors junior chess champion

JAIME GORMAN, at 11 one of Britain's leading junior chess players, is to be sponsored by Computer Weekly.

Although he has been playing chess for only two years, Jaime has already achieved several successes in the chess world, including winning the Under-10 North London Championship, coming second in the Under-12 section of the Evening Standard All-England Tournament, and being named last year as Player of Most Outstanding Promise at the Southern Counties Championship.

Chris Hipwell, editorial director of Computer Weekly, referred to Jaime as a "young player with great potential," and said that Computer Weekly's support would enable him to have regular coaching, as well as looking after entry fees for tournaments and travelling expenses.

Computer Weekly's interest in chess reflects the growing developments in programming computers to play chess, but as Hipwell added, "We do not lose sight of the human aspects of the game, and with a record as impressive as Jaime's we felt he deserved some encouragement."

ICL challenges IBM across the board

A NEW, low-cost processor for the 2903 is on the way from ICL, and the company is also laying plans for a chain of shops to sell business systems. The company has just announced a new 2982 processor to match the 303X, and coupled with the new mid-range machines and a low-cost, easy-to-use subset of IDMS for 190X users, ICL has answers across the board for all IBM's most recent announcements.

The new 2903 processor will almost certainly be a bit-slice microprocessor emulation of the existing 1973 vintage processor, but it is not known which chip ICL is using.

Plans for shops are still embryonic, but space suitable for a retail outlet is one criterion for choosing new ICL office accommodation, and the first one could open within 12 months, probably in Manchester.

At present the 1500 is the only suitable product, possibly including the 1500 series text processing suite which is not yet generally available but is in use at some sites.

However, UK sales director Dr Peter Aylett believes that a completely new product costing about £5,000 will probably be needed; a minimum configuration stand-alone 1500 costs about £10,000 with some software.

The IDMS subset for 190X users is called IDMS-E, and is ICL's answer to the IBM System 38 database machine. IDMS is already available on 290X, but has few users because it is too complex for the typical 200X customer.

The new 2982 replaces the 2980 and is developed from the 2972-76 Order Code Processor. It is the first ICL 2900 to incorporate a cache memory, 16K-bytes, and takes up to 16 Megabytes of main memory. A single processor 2982 matches the 3032, and a dual processor the 3033.

The 2970 can now also have up to 16 Megabytes, and the 2972 12 Megabytes.

A new 2900, called the 2960/10 has been added; it is a reimplementation of the 2960 processor in new technology. Store Access and Store Multiple Access Controllers and main memory are common to all machines from the 2960/10 up, and only the Order Code Processor needs to be switched to upgrade. 2972 to 2976 is a field-upgrade.

On the new 2905, 2950/10 and 2950/10 announced last week in the UK (CW, May 24), the Productivity Enhancement Packages, which comprise IDMS-E, a subset of the new ICL Data Dictionary System. Minimac and the 2900 Range Cobol, mirror IBM's Installation Productivity Option packages of software. However unlike IBM, they do not include the operating system, and are cheaper than the aggregate cost of the items bought separately.

Language translator to be basis of personal computer

A HAND-HELD language translator, being introduced into the UK by Cherry Leisure next year, will form the basis of a hand-held personal computer.

Retailing for £139.95, it is claimed to provide English translations of French, German, Spanish, Portuguese, Italian and romanised Japanese. The programs for these are held in ROM, mounted in apacial memory capsules.

The developers, California-based Friends/Amis has now entered an agreement with Matsushita Electric of Japan to develop the unit into a personal computer system.

This will extend the memory capsule idea to work with a wide variety of memory components. It is also likely to have a small printer, video display, and could function as a teletext or view-data terminal.

Irish telecoms sell-off study

A STUDY is being carried out for the Irish government by Arthur D. Little and American Telephone and Telegraph on selling to private industry the telecommunications operations of the Republic's Post Office. There is a serious backlog of telephone installations and this is causing difficulties to firms wishing to use computer communications. One firm mentioned as a possible buyer is AT&T itself.

Consolation in company half-year figures

COMING at a time when several big companies have disappointed the City with results substantially below forecast, ICL's half-year figures will come as some consolation. However profits were below target as a result of labour troubles in February and March.

On Tuesday the company reported half-year pre-tax profits of £16.6 million, over 17% up on the figure for 6 months to March 1978, on turnover up 23% at £285.1 million. ICL traditionally does more of its business in the second half so the company is set for full year profits of over £40 million on turnover of £810 million.

The company reported orders up by 30% over the same period last year, a good performance in view of the uncertainty caused by recent IBM announcements. An interim dividend of 3.5 pence per share has been declared; this is 22% more than the interim paid last year.

There was a low level of activity on the Stock Exchange on Tuesday, after the holiday weekend; the immediate reaction to ICL's interim figures was a rise of 13p to 468p.

This followed Friday's closing price, which showed a fall of 8p.

INSIDE THIS WEEK'S CW.....

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This special international edition of Computer Weekly will be distributed at the National Computer Conference in New York. Heath Wiener previews the conference programme and provides a round-up of the American scene . . . Fred Lamond looks at the development of the PABX market in Europe . . . Tim Pelton reports on the growth of computer operations in Eastern Europe . . . and there is also the usual wide coverage of news from around the world.

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JOB VACANCIES: PAGES 19-47

Discounts offer on Series 1

QUANTITY discounts on IBM Series 1 minicomputers came into effect in the UK last week, as anticipated following the US announcement (CW, March 14). The same rates apply as in the US, 5% on an order for between 50 and 99 machines, 10% up to 149, and 15% thereafter. No discount is offered on a purchase of less than 50 processors.

The discounts, which apply to products installed in an 18 month period, also cover devices specific to Series 1 and purchased licensed program products.

Software for the Series 1 has been evolving rapidly and now constitutes a sophisticated and comprehensive offering. A transaction processing system was launched earlier this year and is to be joined this month by other major new facilities. Details, page 7.

DEC Pascal for Vax

A NATIVE mode Pascal compiler for the Vax-11/780 is to be released by Digital Equipment Corp by the end of the year. It is being developed by DEC in conjunction with Washington University at Seattle and is said to be intended for both educational and industrial use.

An early user will be the University of Adelaide, Australia, which has ordered three Vax machines partly because of the availability of the compiler.

Although Pascal compilers have been developed for nearly all minicomputers, few manufacturers have yet committed themselves to the language.

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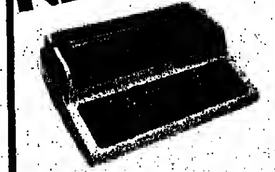
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The sell-out of the century

IN MORE stable and less hectic days, hocking the family silver was frowned upon. It was a sin to sell off the ancestral acres. And stately homes were preserved at all costs. Noel Coward even wrote a song about it.

The principle was clear: family assets accumulated over many years should not be dissipated by a single generation. Or to put it in terms which many people still adhere to today, "You mustn't break into capital."

How ironic it is, then, to see Sir Geoffrey Howe, a leading member of the party which represents stability, probity and return to traditional values, poised to sell off national assets on a massive scale. And that, in a nutshell, means government holdings in a wide range of industrial and commercial enterprises, at present vested in the National Enterprise Board.

The reasons for such a move are clear. Redeeming the promises made by the Conservative Party in the run-up to the election will be an expensive business. Wage settlements with the police and the armed services have already added substantially to the national wage bill but even more pressing is the necessity to find the money to bring down the basic rate of income tax. And Sir Geoffrey must be in a position to say where that money is coming from when he presents his first Budget on June 12.

It will be argued, of course, that there is nothing sacrosanct about such government holdings, and that the Labour administration in any case sold off 17% of its share in BP and 12% of its share in Ferranti.

That is, indeed, true, and it would be ridiculous to say that no government should ever, under any circumstances, be allowed to sell or vary its holdings in industry. Some flexibility must be retained, if only to enable ventures such as the proposed joint project between Data Recording Instrument and CDC to go ahead.

But there is a difference between selling shares in a company in which the government has a majority interest, as it in fact still does in BP and Ferranti, and on the other hand, organising the wholesale disposal of shares in companies which may be regarded as national assets.

And the morality, not to say wisdom, of selling sizeable chunks of companies where the government has a substantial holding, as in ICL where it has 24.4%, Ferranti 50.5%, Data Recording Instrument Co 53.9% and Case 28% is open to question.

Those companies have been built up — to a very comfortable level of profitability in the case of both ICL and Ferranti — with the aid of the taxpayers' money. And it is strange, to say the least, that we should now be contemplating selling what in effect amount to national assets, on the open market.

One might ask where the potential investors in these companies were when money was so sorely needed a few years ago? And why should such investors now reap the benefit of the public investment which has gone into these companies?

Moreover, what would the government's attitude be to bids for their holdings in these companies from foreign organisations, particularly when the military significance of much of Ferranti's computing work is remembered and when ICL's contribution to the balance of trade in computer products is taken into consideration?

But perhaps even more important than these issues is the question of stability and continuity. The high risks and costs associated with the development of computer systems and products have deterred rather than attracted investors. In this situation government support has provided a much-needed stabilising factor, particularly for smaller firms, and indeed even for ICL at the time when the high costs of developing the 2900 series were being incurred.

To remove this stabilising factor, leaving high technology companies to the mercy of the market forces which are supposed to exert such a healthy and invigorating influence on the economy, will be to jeopardise the very existence of the British computer industry when other countries are stimulating and supporting theirs.

It would be an easy and doctrinally attractive solution to Sir Geoffrey Howe's money problems to sell off government shares in ICL and Ferranti and to cut spending on insec, inmos and other government ventures in the computer field. To do so would be a great mistake. The national press would probably hail it as "The Sale of the Century". Others might see it as the sell-out of the century.

FOCUS

Call of the West

THERE can be few in the DP industry who are unaware that some momentous event is currently happening beyond our shores. The call of the West is stridently summoning all parties to the annual United States DP jamboree — the National Computer Conference held this year in New York.

No self-respecting sales executive, vice-president, engineering manager would dream of being absent from the four-day session — although only a few are likely to get the opportunity to attend.

Being featured this year is a Personal Computing Festival, which is guaranteed to draw even greater crowds, though whether a special "Big Apple" is to be announced, is unknown. There will, however, be numerous Pets on show which will presumably be kept at a safe buying distance from the large scale IBM 4300s, Amdahls and Crays.

In the meantime, those few of us remaining at our UK work stations, could well be faced with problems. A certain distance will develop between the sales team and the DP installation. Lack of response can be expected, especially from American based organisations. Resources, seldom ample, become decidedly stretched during early June.

Not only do salesman fail to come running, but engineering service and back-up become noticeably more sparse. Urgent requests are channelled along routes which tend to get mislaid midway between California and New York, or perhaps New and California. Feedback — even allowing for time lag compensation — would have troubled even the most tolerant ICT computer management.

Just who is manning the UK shop is the key question, especially for the installation faced with some dire calamity.

Customer responsibility all too frequently takes second place to the requirement to put on good show at the premier exhibition or showcase.

Almost inevitably, the chairman of the NCC Conference is an IBM executive. For much of the computing world, computing is represented by IBM. What the company does this year, the rest will follow as soon as possible.

It is time, perhaps, for the UK and Europe to accept the facts of DP life. Challenging IBM is notably more difficult than surfboarding on the Thames at Putney. Contestants are guaranteed a rough and wet ride with no towels provided. In the UK, the main competition is provided by ICL, with more than a little help from the government. Even so, their $1bn turnover puts them in the micro league compared to the computer revenue of IBM at $22bn. The price of keeping up in the DP technology race is high.

All the more reason, therefore, for casting doubt on the exploits of Jann Barron's State-owned microelectronics enterprise, Inmos. Many experts have already concluded that the project will be too little and too late.

The UK does, however, have a strong role in the international world of DP. By providing expertise and establishing skills in such areas as software, consultancy, telecomme, training and education, we have an unparalleled reputation. Only recently, the CSA announced important UK contracts for software services in Greece and Spain. While such systems houses as Langton Information are spreading WP and viewdata messages across Europe, others are developing new technologies.

The UK could even be aiming for the most comprehensive event. Next year INFO 80 presents in London "The Third International Business Computing, Word Processing and Information Management Exhibition and Conference."

Accounting study

A STUDY into the practical problems of computerised accounting is being undertaken by accountants Pepper, Rudland and Company, which has bought a 64K Digico M16E processor with 11 Mbytes on disc.

1984 and all that...

THIS week's example of the strange things people say in the media about computers was sent in by W. M. Gordon, of Edinburgh Regional Computing Centre, who wins £5.

The health of the police officer is being put at risk by some of the sophisticated equipment being introduced into force communication centres. Experts have found that using visual display units can, over a period, cause eye damage to the operators — and even lead to nervous breakdowns.

Scottish Police Federation secretary Joe Black said it had been found that operators using these units often ended up with "bottle bottom glasses and grey hair."

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Ten years ago...

COMPUTER WEEKLY MAY 29, 1969

To provide London polytechnics with more computing power, several 1900 machines will be installed under a £900,000 plan ... An ICL 1904A has been ordered for the government communications HQ in Cheltenham ... At an IEE discussion "top people" of the industry accepted that there would be a countrywide DP grid, but no one was sure of the form it would take.

IT80 venue

A FULL-SCALE five-day conference and exhibition on Information Technology is planned for Monte Carlo in November 1980. Called IT80, it will cover the broad spectrum of integrated voice, data and image systems, and is claimed to be the first major event of its kind. There is room for up to 80 stands, and the UK Post Office has already booked three for Prestel.

Executive Conference Organisers are running the event and Information Studies Ltd, EIU, are handling the conference.

Data prep venue

DATA preparation at Manchester City Council has been switched to two Redifon 1401 data entry systems which replace Linotype Paul paper tape equipment. Over 60 applications, including payroll, rents and rates, and mortgages are handled by the R1401s which have 16 Mbytes of disc memory and are valued at £104,000.

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Viewdata learning system from CAP

RECOGNISING that whatever viewdata standard is finally adopted internationally, there will be a large worldwide market for software, CAP-CPP is concentrating on this sector of the market.

Last week the company unveiled the framework for a comprehensive education by viewdata system, which has been developed by the Department of Industry funding.

Called Telesoftware Training, the system presently consists of tools, at present unrefined, designed to enable non-specialists to create their own course material for running either on a central viewdata computer or, more likely on an in-house viewdata system or "intelligent television set."

Following the change of government there is some uncertainty over whether additional DoI funding will be available to refine the system further. CAP is hopeful, but is also demonstrating the system direct to industry.

The system at present consists of the tools to put together a course, and sample course material. Three courses are currently in preparation: an introduction to Microelectronics, an introductory software course, and first steps in programming.

While viewdata will be an appropriate medium for delivering material to the Intelligent TV, it will also be possible to distribute it on floppy discs, cassettes, or any medium used by the TV games industry.

With the enormous need for retraining expected in industry over the next decade CAP expects a ready market for Telesoftware Training, which has the advantages that it is intrinsically entertaining, cheap and uses a familiar device, namely the TV set. Limitations are the low capacity of the TV screen and slow communications.

One television rental company has already expressed interest in such a system for training 6,000 repairmen.

CAP's Telesoftware is an extension of the Microsoft division's MicroCobol, which is portable across a wide range of mini and microcomputers. It is currently available on IBM's Series I, DEC's PDP-11, the Zilog Z80, Intel 8080, the Texas TMS 9900, and the Motorola 6800.

Plane of own is answer

FOR the businessman who needs to be in several places, if not at the same time, at least as quickly as possible, an aeroplane of his own could be the answer.

For those who want to see the latest aircraft the Sixth Business and Light Aviation Show, presented by Flight International, is a must. It is being staged at Cranfield, Bedfordshire, from September 5 to 8.

Information about the show can be had from Iliffe Promotions Ltd, Dorset House, Stamford Street, London SE1 9LU. Tel: 01-261 8437.

S. Africa likely to go it alone in manufacturing

FACED with increasing international hostility towards its internal policies, South Africa is preparing to go it alone in the manufacture of computers and computer equipment, according to informed industry sources in Johannesburg.

Top-level discussions between key local computer suppliers and senior government officials in Pretoria suggest that contingency plans for manufacturing in South Africa have a high priority.

The government is said to be keen to establish independant internal sources of supply following reappraisal of its relations with the West in general and the US in particular.

It is pointed out that any major break in the supply line from the US would seriously disrupt local computer industry activity which is currently growing at about 35% a year.

Although John Starkey, managing director of ICL in South Africa, is maintaining a tight-lipped silence, reliable sources say the company is drawing up blueprints for the manufacturing operations in South Africa.

Jack Clarke, IBM's chief in South Africa, also admits that the company has been investigating the feasibility of local manufacture but says he has, as yet, not been involved in discussions with the government.

What South Africa has the capability of manufacturing in computer equipment is beyond doubt, according to Edward Swanepoel, technical director of Data Corp, which pioneered local manufacturing on a small scale. The biggest inhibiting factor, he said, was the cost of local production for a relatively limited market.

Local equipment, it is believed, would be up to 20% more expensive than comparable foreign equipment and it would be necessary to erect a tariff barrier.

However, many South African suppliers and users believe this would be a small price to pay for independence.

Bunker Ramo fights bid

THE bid by Fairchild Industries to buy the 79.4% of Bunker Ramo, which it does not already own, may be resisted. The aerospace company launched the $86 million bid last week (CW, May 24) but has to have the Bunker Ramo board's approval to increase its stake above 21%.

George Trimble, president of Bunker Ramo, questions whether the Bunker Ramo mix of business — it includes computer terminals, electronic components and carpets — would benefit from a merger with a company whose profits are heavily dependent on manufacture of one military aircraft.

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Ex-IBM man to be Cray market chief

TWO years after joining Cray Research from IBM, and subsequently becoming managing director of the UK subsidiary, Peter Appleton-Jones is moving from Bracknell to Minneapolis to take up the post of vice-president for marketing at Cray Research Inc.

His beat will be the Cray world, which presently takes in the US, Canada, France, West Germany, Japan and the UK, and he will additionally be responsible for customer engineering, product management and software development.

Wanted: Irish DP staff for jobs in Eire

TO alleviate the shortage in Eire of skilled technical staff, particularly systems analysts, the Irish Ministry of Labour is launching a campaign to entice expatriates with appropriate skills to return from abroad.

An improved resettlement scheme with grants towards house purchase and travel costs will accompany an advertising campaign and a series of interviews.

In addition to systems analysts, other skills listed as in short supply include electronic and mechanical engineers, and tutters and toolmakers.

Interviews are being conducted by the Irish National Manpower Services in the major cities of Britain throughout June, and are not being confined to Irish people.

The need for these people is being intensified by the work of Irish Development Authority which is trying, ironically, to alleviate unemployment in the Republic by encouraging foreign manufacturers to set up factories.

There are large numbers of well educated but inexperienced staff who need opportunities to be taken on as trainees, but before this can be done, factories need to be set up with adequate numbers of experienced staff.

The IDA pays the salaries of trainees who are exporting their products, and in addition, exports are entirely free of tax until 1991. These benefits are confined to exports in order not to impose unfair competition.

Several UK software houses, such as Altergo and Zeus-Hermes, have set up shop in Eire solely because of the tax and training grant benefits.

FCC wants more comms competition

THE US Federal Communications Commission is proposing that any company should be free to offer computerised communications services on the US public telephone network.

This would include the dominant telephone company AT&T, whose proposed Advanced Communication Service has been the subject of a regulatory battle because of doubt as to whether it was a data processing service, which it is not allowed to offer.

But AT&T would have to provide the service through a separate subsidiary company to prevent unfair competition by cross-subsidy from its monopoly services.

The FCC proposals affect three categories of service: voice, basic non-voice and enhanced non-voice, and it expects to announce a firm policy by the end of the year when it has had time to evaluate the public comments it has asked to be sent in by July 16.

An AT&T statement from vice-president for planning William Sharwell said: "The discussion at the FCC confirmed that the Commission is committed to encouraging broad competition in data communications and to promoting innovative new services."

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Downtime by Chad

Getting it all together, somehow

JIGSAW puzzle fans will be interested in this story. It seems that at a bank in Texas, following — you guessed it — a "computer error," 200,000 cheques and deposit slips were inadvertently fed into a shredder. Faced with a prospect of years of wrangling and litigation, not to say embarrassment, the bank decided on the well-tried American hammer-and-tongs approach, hired 45 extra temporary staff, and got them to stick all the pieces of paper back together again.

It took a round-the-clock operation, but by the time they had finished, all but 400 of the items had been stuck back into a readable stage. The cross-eyed staff then got taken to a funfair for the day as a reward.

"Now wait a minute," I hear you cry. What on earth is the point of a shredder if the nasty snoopers and industrial spies can just stick the pieces back together again? It sounds a bit like chaining a bicycle to a parking meter — all the thief has to do is lift it over the top.

I remember having great fun feeding reels of punched tape into a shredder. (It was terribly confidential information.) Try sticking that back together with Sellotape!

"I think we've just altered the balance of power in Europe . . ."

Instant underdraft

THE Wall Street Journal had a cartoon the other day showing two people looking at a fruit machine. One says to the other, "It's the latest model. It credits your winnings straight into your bank account."

What a great idea! Of course, it would probably want to debit your losses as well, which doesn't sound so attractive. But then why not shift the gambling mechanism into the bank's computer, so the whole thing becomes one super-efficient operation? If you felt like it, you could look at your bank account from time to time to see how you stood. If you're going to throw money away you might as well do it as painfully as possible.

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PO to test 15 System X installations

FIFTEEN System X exchanges have now been scheduled for test installation by the Post Office, and a new digital PABX for 20 exchange lines and 120 extensions, the CDSSI, is being evaluated for use as a local exchange in remote parts of the System X network.

In addition to the 800 connection local exchange due to be brought into service in Woodbridge, Suffolk, in December 1980 and the tandem exchange scheduled for London in early 1981, a digital main network switching centre, DMNSC, two more local exchanges and a local administration centre are planned during 1981.

Another two tandems, three DMNSCs and four local exchanges are planned for 1082 and 1983. Four of the installations are to be in London, three in the Cambridge area and the other seven are still being decided.

Production of a working System X exchange has been brought forward, so that the Post Office has had one working since last month in preparation for demonstration on the British stand at Telecom 79, Geneva, in September.

Another schedule that the Post Office has brought forward is the removal of Strowger exchanges, and the last one is now due out in 1092.

Post Office chairman Sir William Burlow contrasts this with the US where, he says, they will not have a fully modernised telephone system before the year 2000. This is in spite of the fact that they already have 29% of their connections on electronic exchanges, compared with 5% in the UK, and only 20% on Strowger exchanges, compared with the UK's 89%.

Acceleration has highlighted the gap at the small end of the exchange programme, so the new Post Office designed COSSI, now re-christened the Monarch 120, is on trial in Cambridge and in Scotland.

More than 2,000 exchanges in the UK have fewer than 400 connections, and small exchanges suitable for rural areas are also important to the export market.

With the whole of the System X programme the Post Office is expecting exports to bring reduced costs from increased production quantities. Its current rate of expenditure on new equipment is £250 million a year and this will remain steady at 1979 values until all existing equipment is replaced.

The whole of this amount will be on System X once installation starts, and at least as much is expected to be earned in export orders through British Telecommunications, the recently renamed company formed to export System X.

WP under fire at Infotech conference

THE importance of word processing as a functional part of automated office systems came in for some statistical attack last week during the presentation by Chris Ellis, manager of business strategy for Nexos Office Systems, at the Infotech conference, "Microelectronics in data processing, the next five years."

He said there was some confusion caused by the common use of the phrase "office systems" to describe word processing equipment, which he said were little more than sophisticated typewriters.

The typical view of the medium to large customer Ellis outlined was that word processing functions were the necessary first building blocks for an office system, while in fact the distribution and retrieval of text would be of more value than more efficient typing.

In fact, he said, the productivity gains that could be made at the secretary/typist level had a minimal effect. For example, in most companies, secretarial staff accounted for less than 10% of costs, and typing for only 25% of that.

Quoting a typical office situation where there were five professionals/managers to each secretary/typist, with the former paid an average of twice as much as the latter, Ellis said that a 30% improvement in secretarial productivity would mean a saving of only 3% in managers' time.

If greater secretarial efficiency also meant less actual secretarial support for the managers, the productivity gains could easily be lost.

Office systems, he said, must centre much more on improving the productivity of a company's managers and professionals rather than its secretarial staff. Otherwise offices will become optimised around the secretaries rather than the decision-makers.

A sales representative telephones his order using MCS voice response equipment linked to a host processor.

Voice response system for field salesmen

VOICE response equipment from Menzies Communications Systems will enable 100 main Flat dealers and 200 General Foods salesmen to input orders direct to their head office mainframes, and have each item checked for correct entry and confirmed — or rejected if it is out of stock.

People in the field are provided with the cheapest kind of terminal you can buy, a 16-button multi-frequency keypad, and even this will be unnecessary when multi-frequency push-button telephones are in widespread use.

Confirmation of the order comes through the telephone in the forms of a message made up from digitised recordings of spoken words held on disc. The General Foods system vocabulary is 96 words and Fiat's is 128.

Fiat's £124,000 system is being installed at its Brentford, Middlesex headquarters where it will link to an IBM 370/138 and a Digital Equipment PDP-11/70 on the same site, as well as to another 11/70 at its parts distribution centre in Warrington, Lancashire.

In managing these links the MCS system will enable three computers to communicate with each other. It will also link IBM 3270 display terminals on a local coaxial line into the 370/138 for enquiry.

Fiat's system will also handle dual tape systems giving the option of batch operation, providing backup. It will communicate with the IBM 3270, emulating a 2803 cluster controller.

At General Foods the Data MCS system will also link to IBM 370/138, but will emulate 3270 display controllers and not do any other communications front-end processing will not have the magnetic operation.

Due to be installed at Banbury, Oxfordshire, by [illegible] should be fully operational to six weeks after installation. Both systems will have the capacity of 15 telephone lines.

THE MCS system is based on modules from Periphonics in the US, a subsidiary of Exxon, which also owns microprocessor maker Zilog. It uses a PDP-11 processor.

EMI scanners pick up again

BUSINESS at EMI Medical, which has been feeling the keen breeze of competition from US and other scanner manufacturers, looks to be picking up, with 10 orders for scanners placed in April.

Three Italian hospitals, at Lecce, Bologna, and Genoa, will receive two CT 1010 specialist head scanners and a 7020 high resolution scanner, together worth about £800,000. They are due to be delivered in mid-1979. Scanners are also going to Austria, West Germany, Spain, Abu Dhabi and the UK.

The scanner uses X-rays and a computer to construct a cross-sectional image of the human body. EMI's scanners, with a scan time of 12 seconds, are slower than those of some competitors, but EMI claims that they give a higher quality picture.

The next generation of EMIscanner, the 7070, will combine high definition with 1? second scan time.

Micro-controlled car route planner developed by VW

VOLKSWAGEN is developing a number of microprocessor-controlled applications for on-board car instrumentation. The most interesting is LISA, a German acronym for Driver Guidance and Information System.

The visible part is a small console mounted on the dashboard where the driver can easily consult it at speed (see picture). The console comprises an extended numeric keyboard, a single line numeric display, and a graphic display, all controlled by a microprocessor and memory within the console box.

At the start of a journey, the driver keys in the destination code of the town or village to which he is travelling; this will have been obtained from a map or guidebook. The display confirms the code that the microprocessor has stored.

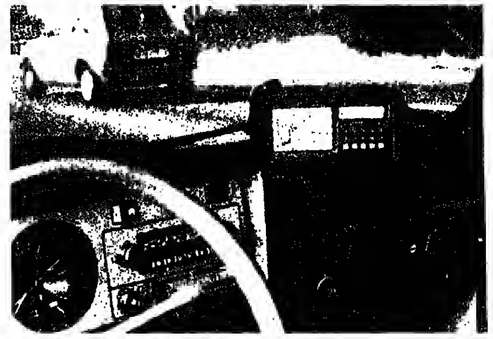
As the journey progresses, the car passes occasional sensor cables in the road. LISA's microprocessor transmits to these the car's destination code, and receives in return coded instructions on the fastest and least congested route for getting there. LISA translates these into a simplified map instructing the driver when and where to turn off.

The roadside sensor cables in turn are connected online to a police traffic control computer system, into which the police can key information on traffic bottlenecks. The computer uses this, and LISA destination codes, to calculate optimum traffic distribution patterns, and to vary routeing advice given to cars.

An experimental area of six interconnecting motorways and main roads in the Ruhr has been equipped with sensors by Volkswagen in association with Blaupunkt and Ingenieur-Büro Hrasch and Bösenfeldt under a contract from the West German Ministry for Research and Technology. The experiment will continue until the end of 1980.

LISA can be extended to control the car's fuel supply on the basis of inputs from an onboard radar system signalling obstacles ahead, provide information on speed restrictions received from roadside sensors, and give the driver instructions on optimum cruising speed. LISA will automatically regulate cruising speed to conform with safe spacing and official speed restrictions.

Another application developed by Volkswagen is the DLS Digital Idling Engine Stabiliser. It maintains real time control of the fuel mixture into an idling engine so as to keep it just ticking over without stalling. The finer adjustments made by the microprocessor ensure that much less fuel is consumed.



The console on the dashboard of a Volkswagen car.

Half-million at Hanover

UNDERLINING Hanover's prominence as the world's biggest international computer exhibition, the organisers report that of the record 540,000 attending the show last month, well over one-third of those interviewed included the exhibits in the three CeBIT computer halls on their list of essential displays to visit.

Visitors from 108 different countries and all continents attended the show, and the biggest surprise is that the small country town of Hanover, with a population of only about 500,000, manages to accommodate them all.

US technicians' strike hits Univac plant

THE first major strike in the computer industry occasioned by President Carter's anti-inflation guidelines has hit Univac's Twin Cities plant at Minneapolis-St Paul.

The plant is the sole source of Univac 1100 series CPUs, and 2,700 electronic technicians went on strike demanding an increase of 10% plus a fringe benefits package bringing the total to between 13 and 14%. Under the guidelines, Univac says it can offer only 7%.

The last strike at the plant was in 1967, and lasted 17 days.

Analysts believe that Univac, as a major government contractor, will feel obliged to stand firm on the guidelines.

The newest 1100, the forthcoming 1100/60, will be built at the plant. As exclusively revealed in Computer Weekly (May 17), the 1100/60 is a bit-slice emulation of the 1108, using multiple parallel processors built out of Motorola 10800 4-bit microcoto achieve a performance of 1.2 mips.

Use of the new technology has enabled Univac to make a dramatic reduction in the size of the 1100/80 compared with its predecessor, the 1100/40.

The number of circuit boards is reduced from 1098 on the 1100/40 to 160 on the 1100/60, and CPU floor space is reduced from 52 to 12½ square feet. One Megaword of memory takes up less than one-third of the space of 512K-words on the 1100/40.

The 1100/80 makes its debut at the National Computing Conference in New York at the beginning of June.

S. Africa growth plan

Esmond Frank reports from Johannesburg

PROJECTIONS based on the results of the latest survey of the South African computer industry by the Department of Statistics in Pretoria suggest that the country's installed computer base should be worth £441,176,470 by the end of June.

The survey shows that the value of the country's total installed computer base grew at a compounded annual rate of 27%, from £167,647,050 to £270,588,230, between June, 1975, and June, 1977. The official figure is not yet available.

John Starkey, ICL's managing director in South Africa, says the growth rate, which has been maintained at between 20 and 30% a year over the last five years, is unlikely to be less than 30% this year.

South Africa's big three computer suppliers, ICL, IBM and Burroughs expect combined sales revenue this year alone to top £185 million.

Sales of ICL equipment in South Africa last year amounted to more than £42 million or about 10% of the company's total international sales. Company sales in South Africa so far this year amount to more than £26 million.

Meanwhile, IBM reports that large system sales recorded by its DP division in Johannesburg for the first four months of this year are 120% higher than for the first four months of 1978.

DP staff crisis in US

SHORTAGE of qualified people to fill DP posts has been identified as the most serious problem currently facing managers of State government information systems in the US.

In its annual report, the National Association for State Information Systems (Nasis) states: "No other problem has shown the dramatic reversal of impact as has the recruitment of personnel. Since 1971, it has moved from last place to first place as the most serious external problem."

The report goes on to point out that the inability to recruit and hold sufficient competent staff also helped to aggravate what it categorises as "internal" problems.

As in previous years, the most serious of these was again missed programming schedules. It was followed in order of importance by excessive costs; programming backlogs; and missed production schedules.

Nasis, which surveys DP installations in all 50 States to produce its report, also detected significant changes in hardware deployment. The number of minicomputers installed, for example, had doubled since the previous year both in absolute terms and as a percentage of total systems.

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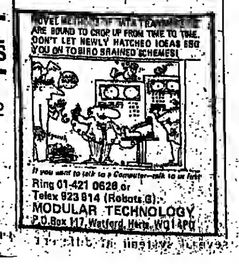

Bid cash clears way for ADDS plans

WHEN Applied Digital Data Systems finally conceded defeat in the bitter battle with Racal for control of Milgo Corp, it came out of the fray with a windfall of some $19 million net, paid by Racal for the 48% of Milgo shares which accepted the ADDS offer.

Some of it has been spent on buying up some of its own shares; including a major transaction in which it bought out the interest that its most important customer, NCR, held in ADDS.

Some has been invested in a major new plant across the country from its Hauppauge, New York headquarters, at Salt Lake City, Utah. More is to be invested in building up ADDS' business in Europe, but the company is still sitting on an enormous pile of cash — $14.1 million in the 1978 annual report — which has caused it to be nicknamed the National Bank of Hauppauge.

ADDS claims to be the largest independent manufacturer of display terminals in the world, and has now built more than 100,000 of them. This business is still dominated by one enormous customer, NCR, which provided ADDS with 39% of its $40.9 million business in the year to November 30, 1978. The 1978 turnover was up 41% over 1977, and the proportion of NCR business stayed the same.

Over the past couple of years, ADDS has begun to diversify into a second major business, microcomputer systems.

The product for this market is the System 75, an enhanced version of the Intel 8080-based System 70. The products consist of display and keyboard, processor with 52K-bytes of user memory, and up to three floppy disc drives.

Unusually for a business microcomputer, it offers Fortran IV as well as extended Basic and Micro-Cobol, all three coming from CAP Microsoft of the UK.

In the UK, some 70 System 70s are now installed, sold mainly through dealers, and ADDS has been commissioning software houses and dealers to write software packages. The parent company insists on a high standard of documentation, and all dealers must be approved by ADDS' dealer board in the US.

The UK company is taking a tripartite approach to marketing microcomputer systems.

General dealers sell systems packaged primarily for accounting, while ADDS is beginning to identify specific user communities for which special suites of software will be developed, the first being an incomplete records package for accountants. The third mode of selling is direct to national accounts — large companies with a requirement for several systems at different locations.

"The end-user price could be at about £10,000, including software," says John Bellamy, managing director of ADDS UK.

ADDS now wants to expand its business in Continental Europe, and has recruited Ian Cooper, formerly with Nixdorf, to head the European operation, working out of a new headquarters in London with approach on the Continent mirror that in the UK.

Reliability, and the reference that ADDS has enough cash in the bank to ensure future, are the key selling points for its products.

"We took a System 75 to Yugoslavia for Volkswagen Caravelle to demonstrate on four cities, and despite the roads and the general mayhem it got, it operated perfectly all the time we were there," says Bellamy.

If going to be a mess on the line Analysis II will spot it

The picture above shows that lines of communication are not always trouble-free. Data travelling along telephone lines is just as likely to run into difficulty.

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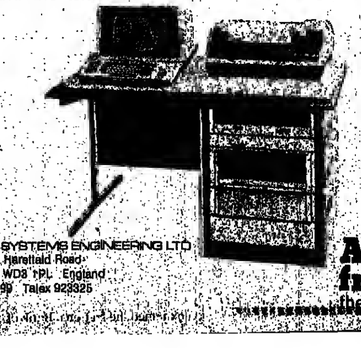

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MICHIE'S PRIVATEVIEW

The chips blues

AT an early age an indissoluble connection formed in my mind between the romance of technology and the ideals of socialism.

I remember a street stall in my home town over which flowed an endless stream of dilapidated secondhand books priced indiscriminately at tuppence. Like any pig rooting for truffles or forty-niner panning for gold, I would rummage with meticulous care for works by H. G. Wells.

Reason and disciplined enquiry, the manifest source of these dazzling marvels of today and tomorrow, could not the same methodology be applied to society itself? Could not a serenely regulated utopia be caused to emerge from mankind's jumble of marvels?

So Tony Benn's white-hot technological revolution of some 10 years ago, and Jim Callaghan's recent promotion of "chips with everything," seem to fit.

But when looking at the area of computing for signs of real scientific planning, I have been finding over the past few years a strange reversal of traditional roles of Left and Right, with Labour remaining stubbornly laissez-faire while Conservatives draw up detailed blue-prints for information technology and the management of its social impact.

Computer Weekly readers have sampled some of the thinking of Ian Lloyd's information technology group (CW, April 5). Other studies have been pursued by Philip Virgo's Conservative Computer Forum. Virgo's latest output "Cashing in on the chips,"* shows further evidence of Tory homework behind the scenes.

The unemployment threat is carefully analysed, and its true nature is revealed as more concerned with change of jobs rather than with any net loss of jobs.

"The unemployed cannot move to where the jobs are, because they can't get homes there, and even if they could, they lack the skills in demand or don't want the unskilled jobs vacant."

Obstacles are further analysed into:

- Fear of unemployment, rational under present conditions;
- difficulty of changing jobs without abandoning accumulated pension rights;
- difficulty of learning new job skills;
- difficulty of moving home; and,
- planning, legal, fiscal and other obstacles to starting one's own business.

To me the most intriguing single recommendation was "to change the standard public sector working week to three days of 10 hours and one of five (for the overlap) and open all government offices from 9 am to 7 pm for six days a week."

Why not generalise this to private sector employment, with obligatory subsidy by the employer of an additional day in the week for educational release?

Perhaps this, like some other variants of the 35 hour-week, would commend itself more to the trade unions than to Virgo's group.

It is, alas, one thing for back-room analysts like Virgo or Lloyd to show vigorous awareness, but Ministers are a breed apart.

Sir Keith Joseph's hoped-for appointment of a Minister of State for Information Technology, surely a minimal step if serious intent exists, has not materialised.

I and some others hope to obtain an opportunity to put Sir Keith to the question. Views from readers before we go would be very welcome.

Reference

*Cashing in on the chips: a policy for exploiting the semiconductor revolution, by Philip Virgo, 22pp. Obtainable from Mr Virgo at 2 Eastbourne Avenue, Acton, London, W3.

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SOFTWARE FILE-1

First Algol 68 for Honeywell Multics from Bath centre

THE first Algol 68 compiler for Honeywell's Level 68 Multica — and one of only a handful yet developed for any machine — is being implemented by the South West Universities Regional Computing Centre.

Intended for the Level 68/DPS system at Bristol (CW, December 21, 1978) the software will be a re-implementation of the Algol 68 RS compiler developed for the ICL 2900 series. This was delivered to ICL recently following joint development by the centre with the RSRE, and the Oxford University Computing Service.

Expected to be released as an ICL product in the next few months, it is already running on the 2980 operated by the centre at Bath; it is the availability of Algol 68 RS on the regional network which has prompted demands for a similar compiler at Bristol.

Algol 68 RS originates from a portable compiler project at RSRE and is written almost entirely in Algol 68 itself. The task of converting it thus consists mainly of writing a new code generator.

Even so, a substantial effort is involved estimated by the centre at five man years. It expects to have a usable compiler available in the last quarter of 1980 and to complete the project in the first quarter of 1981.

Given the small number of Multics sites worldwide, one aspect receiving careful consideration is the scope for a further implementation under Honeywell's more widely used Gcos operating systems on the Level 64 and Level 66.

According to the centre's project manager, Martin Thomas, the Multics compiler will not be able to run on such systems without modification. It may though be possible at this design stage to minimise the future effort required.

The team is therefore investigating the scope for design trade-offs consistent with exploiting Multics' architecture to the full in the interests of performance.

The paucity of Algol implementations to date is held back its acceptance as a mainstream programming language. It is however used in the US as a potential competitor to PL/1, both being large general purpose languages.

A key difference from PL/1 is that instead of being permissive Algol 68 is deliberately restrictive. As a result while it is generally easier to get a PL/1 program to compile, an Algol 68 program will typically be easier to debug.

Thomas is optimistic that the 2900 compiler will see significant commercial use, arguing that Algol 68 is naturally suited to structured design methods in a way that Cobol and Fortran are currently not.

Although ambitious next-generation languages such as Algol 68, Pascal, Fortran and Cobol standards are currently being defined to incorporate "structured programming" concepts, the implementation is some way off. By contrast, Algol 68 is available now and is a proven language.

He admitted though that one obstacle could be the fact that the 2900 compiler does not support DBMS calls. This feature could be added with relatively little effort, he thought, as part of his centre's continuing development and maintenance of the compiler.

In addition to applications programming Algol 68 could play a role as a system implementation language and the centre is also looking at the 2900 version as a possible substitute for ICL's TPL.

The Multics and 2900 implementations are thought likely to bring to about half-a-dozen the number of full Algol 68 compilers in existence. Others include Cambridge's Algol 68C for the 360 and 370; Manchester's Algol 68 R for the 1906; and the CDC implementation jointly developed by four UK universities last year. (Software File, January 9, 1978).

There is also a subset compiler, Algol 68 S, which is available for the Modular One and several other minicomputers.

US debut for latest version

HONEYWELL has released a new version of its Multics operating system which according to US reports has enhanced communications, batch processing and reliability features.

Available at no extra charge, to existing Multics users, the release supports a new maximum of four front-end network processors; the Datenet 6670 processor; the Vip 7800 family of terminals; and IBM's 3780 RJE terminal.

There is also a new optimiser for the Fortran compiler, which together with an enhanced run-time library improves Fortran program performance.

Other enhancements include the addition of the timesharing facility TSS to the Gcos simulation environment; improved batch operating facilities; and the addition of main memory testing routines enabling the system to reconfigure around faulty memory blocks.

The reports added that a transaction processing monitor could well be the next major addition to the system and may be released before the year end.

Puzzler

WITH food prices as they are five systems analysts have been given an allotment as a leaving present, to "provide them with enough vegetables throughout the year". The optimistic saying goes that they purchase a square plot of land and erect a square greenhouse in it, as shown here.

Then comes the question of dividing up the available land around the greenhouse so that each scientifically minded type gets exactly the same shape and size of plot. Can you solve this problem by drawing in straight lines dividing their area into four equal parts? See page 9 for solution.

Ventilation design subsystem

A VENTILATION design subsystem has been added by Applied Research of Cambridge to its Oasys computer aided design package.

Called Xduct, it was developed for the Oxford Regional Health Authority and is an integral part of Oasys. It is also linked to BDS, the general purpose building design system developed by ARC from Oasys.

SOFTWARE FILE-2

By Peter Hewitt

RTZ to market prize-winning ledger pack

COMPETITION among UK software houses to win marketing rights to an award-winning mainframe general ledger package has been resolved in favour of RTZ Computer Services.

Developed by McCormack and Dodge, of Newton, Massachusetts, G/L Plus first appeared in the US a mere 18 months ago. Since then it has achieved the coveted distinction of an ICP $1 million award, thought to be a record for first year's sales of any application package.

The package was also acclaimed by users responding to Datapro's annual software survey for 1978, its lowest rating in all categories far exceeding that achieved by competitive packages in any category.

RTZ will be marketing G/L Plus in the UK and Holland, initially to IBM 360/370 users. At its own expense, it is converting the software for ICL 1900/2900 systems and expects to complete these versions by Christmas.

The system, which is written in Ansi Cobol, is also supported on Honeywell's Level 66 series.

Largely parameter driven, a major feature of the package is its flexibility. Different company reporting requirements can be met from one copy of the package via user-defined format.

On the input side, it provides a front-end translator capable of reformatting files passed from other applications, such as an existing purchase ledger.

Predominantly batch, the system is due to be enhanced later this year with a number of online facilities. First to be released will be online edit and inquiry routines and these will be followed by software for online auditing.

The package already provides a batch auditing subsystem together with routines for financial modelling and planning.

McCormack and Dodge, whose sole business is the development of financial application software, has so far made around 70 sales of G/L Plus in the US. Some 850 companies have purchased M&D packages.

Unlike the general ledger, however, the other financial applications are likely to require non-trivial modification for the European market and are unlikely to be launched by RTZ before the end of the year.

UK prices for G/L Plus are £24,000 for the QS version and £22,000 for DOS, with a 10% maintenance charge after the first year. The management reporting and financial modelling subsystem, Fast, is priced at £4,000.

Clear growth path now opens on IBM Series 1

A NUMBER of critical Series 1 superstructure products previously announced for RPS only are being implemented by IBM under the other main Series 1 operating system, EDX. They include a Cobol compiler, the transaction processing system MTM, the indexed access method, and sort/merge.

The announcement, made in the UK last week, means that a clear growth path is now open from an entry level EDX system to a fully functioned RPS machine. Commonality between the two operating system was previously restricted to the Fortran IV compiler, which was announced for EDX in January (CW, January 18).

Likely to be one of the most popular of the new Series 1 facilities, MTM (Multiple Terminal Manager) was released under RPS in March. It supports a library of predefined screen formats accessed by transaction processing modules in Cobol, Fortran, and PL/1.

Just two steps will now be required to transfer a typical Cobol or Fortran-based MTM application from EDX to RPS; program recompilation and the re-entry of screen formats.

MTM will be available under EDX in October for a monthly rental of £8.25 or a one-time licence fee of £403.

The EDX Cobol compiler, due to release in July, is a compatible subset of the Cobol compiler under RPS — itself a subset of OS/VS Cobol release 2.0. It will be available for a rental charge of £38.90 and will sell for £2,332.

The RPS Cobol compiler is one of number of major RPS products due to be released this month in association with RPS Version 4B.

One of the most interesting of these is the Command Language Facility, an online development system. The two components of CLF are a multi-user interactive session manager and a command language closely similar to CMS under VM/370.

Also indicating the rapidly growing sophistication of RPS is the emergence of a subsystem of loading transients, DTPM. Apparently designed to supersede ATTS, DTPM allows transients to be executed directly from secondary storage and should help to overcome previous criticisms of poor language performance, especially for PL/1.

DTPM (Dynamic Transient Pool Management) employs a least-recently-used algorithm to tune the system dynamically but can be complemented by a transient activity tool PRPQ permitting monitoring and control by the user.

Also included in this month's release are SNA support; programmable multi-line communications; 370 channel attachment; enhancements to assembler language performance; the indexed access method; and sort/merge.

Operating system for Rjad range to get 370-type facilities

THE operating system of the Rjad unified range of mainframe computers is currently being developed to offer the kind of facilities which IBM introduced over the two or three years following the introduction of System 370.

Called OS/ES, the operating system is currently up to release 6.0, which was introduced early last year, and supports virtual memory for the first time. According to the East German company Robotron, which builds the largest Rjad machines currently available, the new release combines the advantages of sequential, indexed sequential and direct access methods.

Three forms of multi-programming will be supported in OS/ES: multiprogramming with a fixed number of tasks, multiprogramming with a variable number of tasks, and single virtual storage, SVS.

SVS will provide a single virtual storage space of up to 16 Megabytes, and will only be usable on models which include dynamic address translation.

These are the ES-1035 from the USSR, the ES-1045 from Poland and the USSR, the ES-1055 from East Germany and the ES-1065 from the USSR.

The 1065 is being developed alongside a new design for the 1060, which was to have been included in the earlier range, but never went into volume production, and has now been modernised, for inclusion in the new series the Rjad-2.

Release 6.1, due in March 1980, will be followed about 18 months later by 6.2. This will include multiple virtual storages, MVS, allowing up to 16 Megabytes for each user.

Programmer Notes will be resumed next week.

The 6.0 release includes better facilities for error recording and tracing, and a job entry subsystem and job steering facilities are under development.

The massive development effort going into developing all this operating software raises the question of why the Comecon countries did not simply "do an Amdahl."

Users of Rjad machines say that IBM 360 operating systems can be mounted, and run after at most trivial changes. Equally programs written to run under 360 operating systems will run under OS/ES.

The answer is that like many Western European countries — for example the UK and Insec's 64K RAM — the Comecon countries feel a need to master the whole range of the technology for themselves, lest some day they be cut off from it altogether.

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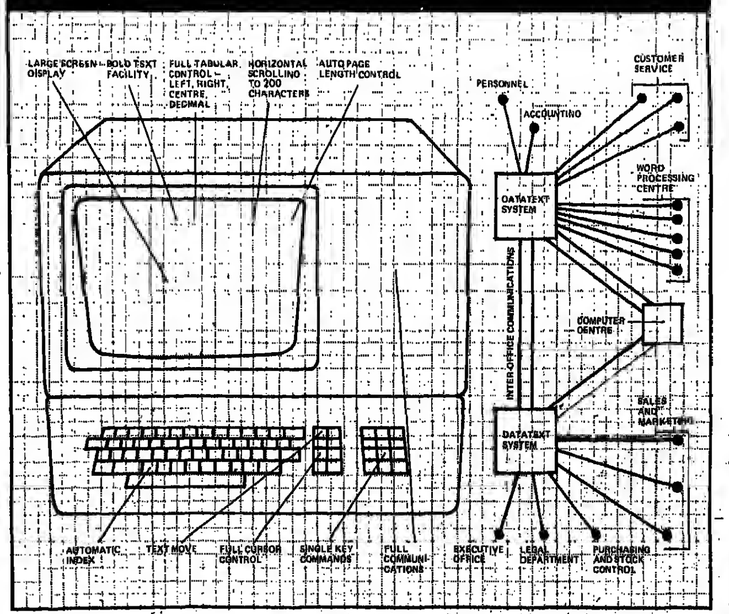

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OP SPOT — By Bernard Allen

Call for govt survey into effects of shift working

"THE government should carry out an in-depth investigation into the effects of shifts — not only in the computer industry but also in other areas where they are worked."

So writes Pete Rushton, a shift leader at Manchester University, in response to the fact that an operator was advised to give up shift work by his doctor, who described him as being in a state of permanent "jet lag" (Op Spot, May 10).

He goes on: "Operations staff should be given medical check-ups on a regular basis — I agree with you entirely on the matter.

"But might I add that a medical should be given to a person before he is actually taken on as an operator, in order to be sure that he is fit enough to work shifts."

According to Rushton, operations staff must be involved when the rota is worked out because, at some installations, the management just don't appreciate what working shifts entails.

"We are the ones who have to work the rota, and so we should have a say in which one is adopted, rather than have it thrust upon us by someone who doesn't know what it's all about."

At his installation, there are four teams, each comprising eight operators, working a 12-hour shift pattern to provide 24-hour cover seven days a week.

He continues: "We worked out our own version of the 12-hour shift system four and a half years ago and it works extremely well for us.

"We like the system because it gives us rest periods between shifts. This is good because a certain amount of time is needed to adjust and 'recharge' before starting the next period on shift.

"And our operators aren't constantly changing from days to nights, and vice versa, like the unfortunate chap you mentioned."

Rushton makes some very interesting points and, in my view, the one about operator involvement in deciding upon a shift pattern, is of particular significance.

At one installation I know of, the operators worked days only until the ICL system was replaced by IBM kit and a two shift system was implemented.

Now a senior member of the operations staff — a person who, at that time, had no experience of shift work — insisted that the operators work a long day shift and a short evening shift. Despite the fact that several of them objected to it, the operators found themselves working from 8:00 am to 5:30 pm on days.

The theory behind the rota was that the short evening shift would enable the operators to make the most of their days off. However, the day shift was impractical for those operators who spent at least an hour travelling to and from the site.

To his credit, the person responsible for the system conceded that he was wrong and a more conventional version of the two shift pattern was employed.

● Pete Rushton has kindly sent me details of the shift system used at his site and I intend to use it in further discussions on shift work in this column.

Plain speaking

ONE of the great virtues of certain members of the operations fraternity is the direct manner in which they put their views across. Consider the following:

An operations manager on career progression: "I have worked in both systems and programming but prefer operations because of its day-to-day involvement in the real world."

A shift leader on operators: "They are such a moaning lot that I wonder why most of them don't write to you (Op Spot) to tell you all about it."

And, finally, an operator on security: "At our site security is an absolute joke — it's so lax that a 10-year-old with a stick could break in."

HINT OF THE WEEK

Learning from past mistakes

ENDORSING an Op Spot hint on the use of the hardcopy log as a means of learning more about both system and workload (Op Spot, May 17), and commenting further on the subject, DP manager R. White writes: "We use a two-part hardcopy log. The top copy is torn off and, along with the output, returned to the programmer or operations supervisor to be filed away.

"The second copy is the historical record and can be very useful in the event of a 'disaster' striking twice. Questions such as 'How did we get out of this the first time?' and 'Which version of the program was run?' can be answered by referring to it."

MICRO NEWS — By Martin Banks

VDU boost from IBM research?

VIOLET-ON-BLACK flat screen displays with attractive performance characteristics could result from research into electrochromics which is under way at IBM's Hursley research centre.

The principle being applied is that certain compounds change colour when suspended in an electrolyte and the polarity is changed. Silver is one such, but is impractical for application in computer displays because the switching process and colour change takes 100 milliseconds.

At Hursley, the addressing time has been reduced to four milliseconds and below using a derivative of a compound called viologen. Viologens are soluble salts and both ICI and Phillips have been working on different ones.

The idea is to use a matrix of silicon semiconductors to address each square colour unit in the screen directly, and IBM's progress was reported by Dr Donald Barclay at the laboratory earlier this month.

Electrochromic displays have several advantages. They are passive and have power-off memory. This means that not only does the information displayed remain visible without refresh until it is altered, but survives when the power is switched off.

CA warns: 'be prepared'

THE move by Computer Automation to enter the "disposable" computer market (CW, May 24) adds further greyness to the growing indistinctness that exists between minicomputers and microcomputers.

The Scout computer is going to be, as a company spokesman put it, "a minicomputer and a microcomputer price". He followed this by suggesting that several of CA's competitors will be shaken by its introduction.

Expected to be launched at the NCC in New York next week, typical Scout systems will cost around $1,000 in the US. No pricing information is available as yet for the European market, where the system will be introduced some months after the US launch.

A typical Scout configuration is expected to consist of four of the eleven individual circuit boards that will be available, each of which will carry a different function of the system, such as interfacing, memory, and CPU.

Each board will have a self-diagnostic capability, indicated by a light emitting diode. The philosophy is that the boards will be inexpensive enough for defective cards to be discarded rather than repaired.

It is likely to use a new chip in the CPU, though no details of this are yet available.

Expanding

PLANNED expansion has led to the Robert Horne Group, a supplier of quality papers and boards to the printing industry, installing a Univac 1100/12 system, valued at £1 million.

Racal's in-house R&D seeks outside orders

THE in-house microelectronics design and manufacturing facility established by Racal last year, with an investment of some £1.5 million, has now gone "public".

Known as Racal Microelectronic Systems, it is making the design and production service available to outside companies.

Based in Reading, the service will provide custom-designed chips either as complete large-scale integration devices, or as uncommitted logic arrays, as well as thick-film hybrid modules and complete microelectronic sub-systems.

According to managing director Keith Thrower, Racal's uncommitted logic array technology is one of the most advanced in the world.

Using silicon gate cells designed with 5 micron geometries, the company claims that parts manufactured with its ULA process have high packing density, low power consumption and fast switching speed. Design turnround time can be as little as 12 weeks.

This is because the only design work needed is for the final mask interconnection pattern. This is designed using a Racal-Redac IC design system.

Fall in price of software packages flatens out

THE cost of software for microcomputer systems continues to fall to the end user as the market for a particular program package broadens. It is, however, unlikely to fall much lower than the price being charged by Petsoft for a range of Adam Osborne programs.

An effective price of under 20 pence per program is being charged for a set of 78 financial and mathematical programs originally developed by Osborne, the American best-selling author on microcomputers and small systems software.

The set is available at £15, and the programs first appeared in Osborne's, "Some common basic programs." They include mortgage amortisation, linear programming, future value of an investment recipe cost and system reliability amongst other titles.

The set has been a year in conversion from book form to cassettes capable of running on the Commodore Pet. They are available by mail order, direct from Petsoft itself, and will also be for sale through its 157 UK distributors.

For those requiring documentation and listings of the programs the book is also available for £7.50.

Zilog Z8000 prices are released

PRICING details are now available on the two versions of the new 16-bit microprocessor introduced by Zilog.

The Z8002, which is the basic version designed for address up to 64K bytes of memory directly, costs £100 each. It has been available in small quantities since the early part of March this year.

The Z8001, which is now expected to be available with, September, will cost £130. Both off. This is the 48-pin version, the part which can directly address up to 8 Mbytes of memory.

In both devices the same basic chip is used, with the seven address lines and segmentation trap line required for the Z8001 left uncommitted in the 48-pin Z8002.

The Z8001 uses a memory segmentation technique to address 8 Mbytes, and this is controlled by a memory management unit that is not expected until towards the end of this year. Zilog is, however, due to give details of how to produce a management unit using several general purpose devices.

Water processing equipment

TELEMETRY equipment for Yorkshire Water Authority plan to process water from the River Derwent for household drinking supplies is being provided by Serck Controls for Leamington Spa which will install a Serck 2001 Telemaster master station at Bermuda system features, 64K of memory and linked to it will be Serck Chromimic colour VDUs.

Great expectations

ADDING to the growing list of expected new products at next week's NCC in New York is a new microprocessor development system from Fairchild intended for use with the 8440 and 8445 micros.

Printers ready and waiting

PRINTERS, at slightly lower cost and quicker delivery than usual, are now available from Abacus Computers in London. The company has obtained supplies of Centronics Mini, 761, 702 and 703 systems, Texas Instruments 810s and MEC Spinwriters. Prices range from £421 for the Centronics Mini through to £2,165 for a Spinwriter with keyboard. Delivaries are between 14 and 21 days.

CIS—Cobol for Intel launched

MORE details are now available of the Vendor Supplied Programme of software support being initiated by Intel at the NCC next month with the launch of the Micro Focus CIS-Cobol compiler (CW, May 17).

The programme is expected to grow rapidly into a wide range of software products supplied by outside vendors. The products will however be marketed and supported by Intel, and will include both compilers like CIS-Cobol, and applications packs.

A spokesman for the company in Santa Clara said last week that the programme will include any product that offers a worthwhile software solution.

NCC '79 will delve into social effects of computers

THE National Computer Conference, to be held in New York from June 4 to 7, demonstrates that the US computer industry is belatedly broadening its perspectives. Quite a few of the speakers at the conference will address issues that go beyond the confines of computers.

Issues such as international data flow, the social effects of computers, the future of advanced as well as less-developed nations are all central topics this year.

In the past, the emphasis of the conference was markedly different: typical speakers talked about engineering techniques or software methods. That technical side of the industry is well-represented this year, but it no longer dominates the conference.

IBM president, John Opel, will open the conference as keynote speaker. Characteristically, neither Opel nor IBM will reveal the content of the planned speech.

Later that day Dr Willis Ware, of Rand Corp, will speak about computers and society, a topic that has been the object of his work for some time.

Tuesday's featured speaker will be Charles Lecht, head of Advanced Computer Techniques. His topic is to be future directions in computing. Lecht thrives on controversy, and so do his fans — there are many — and philosophical adversaries (there are many of those, too).

On the Wednesday, Congressman Charles Rose will speak on "Computers, law and public policy". Rose, more than any other person in the US Congress, has stated that America's future is tied to the wise use of computers.

His views, which may well be translated into law, could place the government in opposition to the desires of the industry as he examines social priorities in relationship to the needs of business.

Thursday's featured address has Dr Portia Isaacson speaking on "Personal computing — is it worth it?" Dr Isaacson is deeply involved in the personal computer business as the owner of computer stores and as a speaker on personal computing topics.

Other topics to be discussed at the NCC include Edwin Spievack's session on regulation and anti-trust control of computers and communications. George Michael will describe his experience with mass storage at the Livermore Laboratories, and Rein Turn is to hold a forum on privacy protection in transnational data systems.

At another forum, US foreign policy as it affects computer exports will be discussed under the chairmanship of Arthur Downey; and Edward Zimmerman will describe the way computers are used in the White House.

Other events include Gerald Engel's forum on teaching college students and professionals about the ways computers affect society; James Albus's session on advanced industrial robots; Carolyn Landis' presentation on the status of women and minorities in computing; and Kasturisvanathan Vairavan's discussion on the ways computers affect developing countries.

This year's convention is the largest yet, in terms of the number of exhibits, the size of the exhibits, the number of persons who are expected to attend and the number and variety of topics that will be presented.

Congressman Charles Rose believes America's future is tied to computers.

IBM president John Opel will be the keynote speaker.

Charles Lecht lectures on future directions.

But for most visitors, the importance of this year's NCC will be its quality, not its quantity. Americans, forced to think in global terms by oil shortages and political surprises, are becoming acutely aware that computing and data communications will have a great bearing on the conduct of international affairs.

The US computer industry, which has looked inward in the past, is now maturing. The NCC, which has sometimes lagged rather than led the industry, appears to be maturing as well.

...AND NOW, MORE OF MESH WIENER'S LETTER FROM AMERICA

Listening in to secret calls

TELEPHONE service personnel in the US — the people who answer complaints at local telephone company offices — may be subject to a little-known invasion of privacy: their telephones could be open to the ears of anyone in possession of certain secret telephone numbers. These numbers enable customers to listen in on AT&T employees.

For some time service personnel have been aware that supervisors may be listening to their business calls. This process is carried out in the interest of insuring high quality service, according to AT&T. It had been presumed, however, that this eavesdropping was confined to local managers in various AT&T offices.

It was believed, by most who had looked at the situation, that AT&T had achieved an acceptable balance between the desire for privacy on the part of employees and the need to monitor the quality of work performed by these employees.

Making fibre optics in the UB.

Fibre optics for 1980 Winter Olympics

TWO fibre optics transmission links are being installed in New York State. One will be used in the upstate town of Lake Placid, where the 1980 Winter Olympics will be held, while the other will run from New York City through several suburban cities to White Plains.

The Lake Placid installation will be temporary, and when the media have left after the Olympics, it will be taken down. But the New York-White Plains line will carry thousands of audio links in regular commercial service along a route that is one of the busiest communications paths in the US.

The fibre optic cable is about 2 cm in diameter, but is the equivalent of several twisted pair cables each 10 to 12 cm thick.

The 2½-mile link at Lake Placid consists of 12 fibres. Six of them will handle 288 voice communications channels, two will provide television links and four will be used as back-up channels.

The White Plains line is 30 miles long, and has repeaters about every three miles. It can handle 14,000 audio channels simultaneously.

The technical roots of today's fibre optics transmission systems go back 20 years to experiments at Bell Laboratories that led to the development of the laser. In 1976 a complete light transmission system was tested in Atlanta. The New York installations are direct descendants of the Atlanta experiment.

One of the most difficult problems to be faced by the developers of the light beam systems is the provision of small reliable lasers that work at infra-red wavelengths. Infra-red light has lower losses in the glass fibres. As such infra-red lasers are developed, the cost of light transmission is expected to drop sharply and usage of the new medium will increase.

Loans to S. Africa revealed

THE computer has taken a stand against racism. The United Nations Special Committee Against Apartheid has revealed the sources of $5.5 billion in bank loans to South Africa, the most extensive list of its kind yet produced.

The project was completed with the aid of computers that sorted through and analysed thousands of facts to produce a unified picture of banking activities. The work was done by Corporate Data Exchange, a New York research organisation.

The UN group apparently is hoping that the publicity given to the banks and the governments that oversee them will eventually lead to restrictions against such loans. Ultimately, these restrictions could force the South African government to abandon policies which the UN group finds abhorrent.

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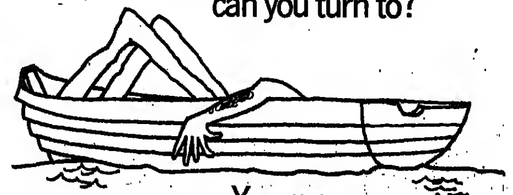

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PEOPLE AND EVENTS

By Judith Morris

PENSIONER Richard "Bumbie" Wood, 89, enjoys the company of Denise Larter, a wirer with CMC of Hemel Hempstead, at a night out at the company's HQ.

Bumbie was one of 22 men, mainly First World War veterans, from the Royal Hospital in Chelsea who were invited to a bar games evening, where they played dominoes, darts and cribbage with CMC staff.

The event, which was enjoyed by all, was organised by the manufacturing manager of CMC, Dave Bernet, who is himself a keen amateur historian of World War I.

IDPM Midlands elections

MANAGEMENT consultant Jim Ross was elected chairman of the newly-formed Midland Regional Council of the IDPM at a meeting held at Birmingham Chamber of Commerce last week.

The main aim of the council was to set up branches of the Institute in the Midlands and this is understood to be the first such attempt outside London following the merger between the IDP and the DPMA.

Other officers elected were: Peter Craig, vice-chairman; Colin Bailey, secretary; David Cox, treasurer; Harry Holman, membership secretary; Paul Thompson, publicity; and Dave Close, education. The following were elected to serve on the council's committee — Peter Birley, T. Bounds, Peter Craig, Roger Doyle, Karen and Steve Hazeldine, Colin Marples, Mike Thornton, Ken Waggstaff and Chris Youett.

The next meeting will be at Metro House, Hagley Road, Birmingham on Tuesday, June 12. It starts at 7.00 pm.

UCSL reorganises sales and marketing

THF subsidiary of Unilever, UCSL Microsystems, has announced the appointments of specialists in its sales and programming divisions, and also a reorganisation following the acquisition of Pensions and Insurance Computer Services (PICS).

Keith Moon has become account manager in the sales team at UCSL. He joined the company from Data Recognition where he was a salesman. Mike Williams has also been appointed to this position. He has worked for UCSL since 1970, and has been in Lusaka, where he worked a two-year contract with ICT Central Africa, designing systems for the Zambian Ministry of Finance.

Assistant development manager responsible for special customer designed software is Margaret Powell. She will head a team of microprocessor programming experts responsible for the design of programs for the M45 and M50 data entry terminals. Prior to this appointment, Powell was head of computer and mathematical services for the Fire Research Station.

Carrie Bedford, who used to work for an export agency in Manchester, has become marketing assistant for UCSL. She joined the company as secretary to the general manager, Bob Gilkes.

PICS, which was acquired last year, is taking over the business for the pension and insurance sectors being handled by other UCSL divisions.

As part of the reorganisation, **Geoff Humphrey** takes up the position of industry consultant within UCSL, with responsibility for consultancy and for identification of the market requirements.

Mike Judd will direct the reorganised PICS, and the new address is 5 St John's Lane, London EC1. Tel: 01-250 0812.

Control Data appointments

The data services division of Control Data has announced a number of new appointments.

Team leader in the South is **David Withey**, a former senior salesman with the company. **Len Groenwood** has transferred to this division from Control Data where he has been a support analyst.

Several new appointments include that of **Graham Kimberley** from Cable and Wireless, **Peter Furness** from Marconi Research, **Richard Galpin** from Merck, Sharp and Dohme and **Alan Derby** an ex-freelance programmer. All join as sales people for the South.

In the North, the new appointments include that of **John Gedder**, who is from Burroughs, **Nigel Seed** from John Thompson Engineering, **Maurean Garwood**, a former accountant with Sharples Photomechanics and **Robert Allin**, from White, Young and Partners.

Ian Bacon, a former consultant with Gemini Computer Systems, has become manager of the recently opened office for Information Processing People, IPP (Northern).

Mike Davies has been appointed managing director of Wescode Equipment. He is a former management consultant specialising in international marketing and general management.

Don Dehard has joined Versatec as UK sales service manager. He was formerly with Computer Technology before becoming hardware project manager for Versatec.

Eddy Dalton has been appointed managing director of the new company, Wright Air Conditioning (Northern), which has been established at Leeds. A former Northern sales manager, **Duncen Smith**, has become sales director of the company, which forms the sixth service member of the Wright Air Conditioning network.

Moon

Eggiman

Amand Sharliff, manager of Burroughs large accounts marketing South London branch, is joining the company's international group at the Detroit headquarters. He is to be product manager for large systems. The new manager of the south London branch will be Peter MacLeod, who is currently Burroughs communication systems promotion manager in the UK.

Vice president of FEACO

THE Management Consultants Association has announced the appointment of Cyril Browo as vice president of the Federation Europeénne des Associations de Conseils en Organisation (FEACO). Brown is managing director of Annan Impey Morrish, a management consultancy firm, and was chairman of the Management Consultants Association in 1978.

DIARY

JUNE 4
CIEC 4000 series Fortran systems. W.D. Manville. BCS Fortran specialist group. BCS HQ, 13 Mansfield Street, London W1. 10.30.

JUNE 6
Weekly wages by direct credit. BCS. City University, London EC1. Contact Christine Cox, BCS on 01-637 0471.

JUNE 7
Computer interpretation of hand printed Fortran programs. M. Brady. Nuclear Physics, lecture theatre, Keble Road, Oxford. 10.30.

AGM and wine and cheese. BCS Merseyside branch. Liverpool University Abercromby Square, Liverpool. 18.00.

JUNE 11
Finding finance for the small business. CAET. Drury Lane Hotel, Drury Lane, London WC1.

JUNE 11-13
Technical study in legal information retrieval in Europe — symposium on results of the study. European commission, and Council of Europe. Council of Europe, Palais d'Europe, Avenue de l'Europe, Strasbourg, France.

JUNE 14
Structured Programming. North East London Polytechnic, Barking, London. Details 01-590 5141, ext 49.

Simplicity and approximation in sequential pattern identification. B. Gaines, Oxford University, Keble Road, Oxford. 10.30.

JUNE 18
World fertility survey: technical problems of international research and ASIM Study group on computers in survey analysis. London School of Hygiene and Tropical Medicine, Keppel Street, Lndn WC1. 17.30.

JUNE 18-21
IMMM '79 Exhibition and confer... London Chamber of Commerce, Grea... Contact Cliff Land, London Chamber of Commerce, 01-248 4444.

JUNE 20
Who will use the general purpose computer? IDPM. Pearl and Dean, ... Broadwick House, Broadwick ... London W1. 18.00.

New approaches to system ... and design. H. Gosling. Edwardian Kensington Close Hotel, Lond... 09.30.

Distributed processing. ... London Polytechnic. Barking. 01-509 5141 ext 49.

JUNE 21
Pattern recognition and ... automation. J. Weaver, Oxford ... sity. Nuclear Physics lecture ... Keble Road, Oxford. 10.30

JUNE 20-22
FTCS-9, the ninth annual symp... conference on fault-tolerant co... IEEE Computer Society. Sta... Wisconsin. Contact IEEE Co... Society, 5855 Naples Plaza, Su... Long Beach, CA 90803.

JUNE 25-27
16th design automation confe... IEEE Computer Society. San Fr... California.

JUNE 27
Introduction to database. Kent ... London Polytechnic, Barking. Ext ... 01-509 5141, ext 49.

Data manager. NSP. 11 Glen ... Place, London W1. 10.30.

Award for chip TV programme

The BBC Television Horizon programme, "Now this chip's down," which examined the role and impact of microprocessors, has won an award in the Goldwyn, who wrote the programme.

Goldwyn receives £1,500 winner of the General Cinema of the 1978 Technology Writing Awards. These are sponsored by ITT Business Systems under the auspices of the Association of British Science Writers.

The awards were presented yesterday at a reception at the Savoy Hotel by Lord Hinton of Bankside.

Barry Thompson has joined OEM sales division of Prutec Ltd, previously manager of the incremental division of Perseus, and **Mr Eggiman**, formerly an electronic engineer with Borer in Switzerland, has been made responsible for the Protea computers in South Africa.

Manfred Amandi has been appointed managing director of Data Recording German subsidiary based in Munich. He will be responsible for controlling DRI sales and service operations in Germany and Austria. Previously he held similar positions in computer marketing with AEG-Telefunken and Intel.

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by Dan

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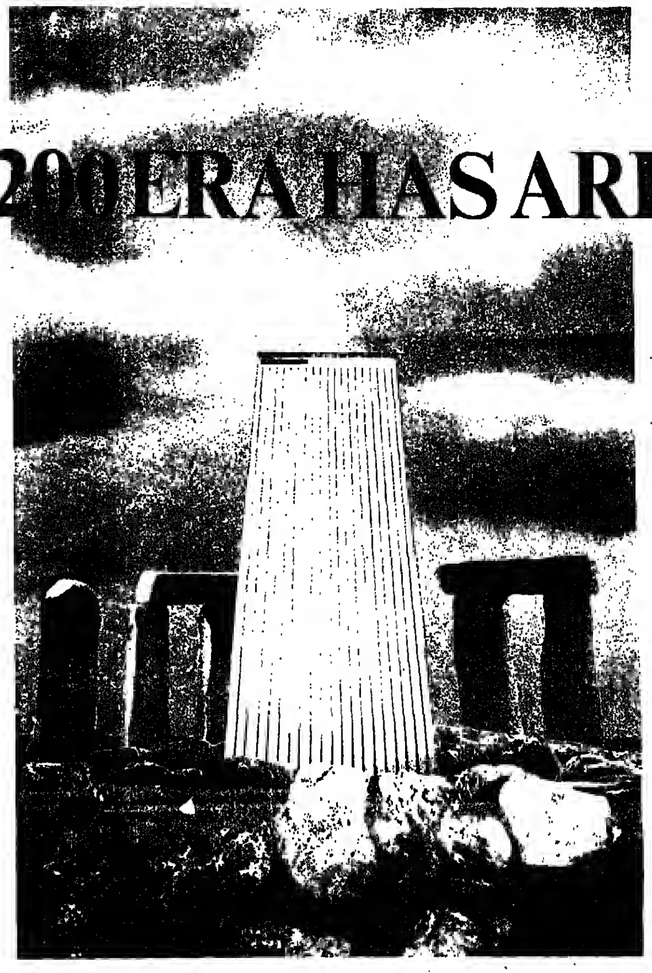

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To match the most advanced hardware, Perkin-Elmer 32-bit software has been refined and proven where it counts — in the field. This powerful software includes OS/32, a real-time, multi-tasking operating system, together with a host of language processors and utilities, including COBOL, globally optimising FORTRAN VII, BASIC, CORAL66, ITC transaction monitor and OS/MTM for multi-terminal program development facilities.

The 3200 Team

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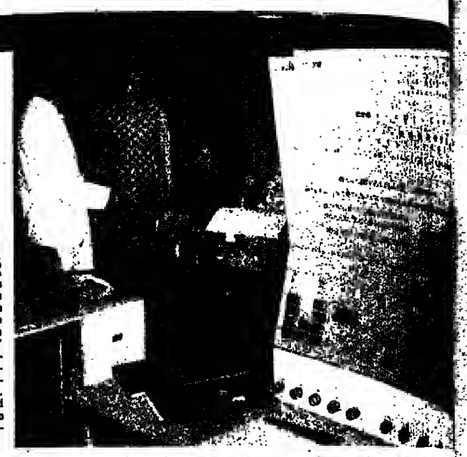
TIM PALMER ON THE COMECON COMPUTER SCENE

Do-it-yourself service is the Robotron rule

BECAUSE of the great distances between major centres in the Socialist countries, and the comparatively small population of mainframe computers, it is uneconomic for the supplier to try to provide a round-the-clock maintenance service.

Do-it-yourself maintenance is therefore the rule for customers of VEB Kombinat Robotron, the East German enterprise which builds the most powerful computers in volume production in the Comecon countries' Rjad unified range.

These mainframes are the ES-1040, which Control Data rates as comparable in power to the 370/145, although it is more like a large 360, and the ES-1055. The specification of the 1055 makes it a little more powerful than the 370/148, 0.45 mips compared with 0.43 for the 148, but Robotron plans to expand maximum main memory to four Megabytes, bringing it closer to the 370/158.



Students undergo instruction at Robotron's training centre in Leipzig. "It makes a welcome change to get a girl on one of the courses," commented Helmut Steinhoff, Anlagenteahnikleiter at the school. In the foreground is the console of a Russian-built ES-1022 computer.

First delivered in 1974, the ES-1040 is the most successful mainframe in the Rjad line, with well over 200 installed, and between 40 and 50 to be built this year, as well as 11 ES-1055s.

Instead of providing maintenance to customers, Robotron trains the customer's own engineers, and the largest training centre is in Leipzig, where a teaching staff of 200 educate 2,000 students a year.

Since Robotron has installations or customers in all the Socialist countries, as well as Iraq, India, Cuba, Yugoslavia, Mongolia, North Korea — and Control Data in the US — the majority of the students going through the training school are foreign. Where it is necessary to give a course in a foreign language, interpreters generally have to be used, but the number of courses available in Russian and English is growing.

Robotron provides hardware and software courses at Leipzig, and also trains operators. For a mainframe installation, 10 operators and seven maintenance engineers are usually trained — and the students are put forward by the customer.

However, a minimum education standard is required, and preliminary tests are given. If students put forward prove unsuitable, the customer has to bear the cost.

In a planned economy, each sector is given a centrally-decided priority, and that given to computers in the Comecon countries is such that there is a shortage of computer hardware.

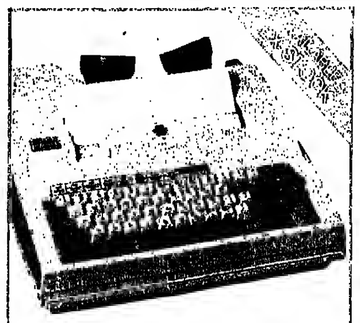
At the training school Robotron has one fully configured ES-1040 system, and a 1055 CPU which is being configured with peripherals and can be linked to the 1040 in a multiprocessor configuration. A second 1040 processor is dedicated to training CPU specialists, and there is a third 1040 CPU for training in online techniques and diagnosis.

There is also an ES-1022, and an old R21, which is ES-compatible, runs under the DOS/ES operating system, but having been built in 1971, predates the Unified Range.

The shortage of hardware makes it tough for the students. "Hardware is our biggest investment," says Helmut Steinhoff, head of hardware technology at the school, "and we have to get maximum use out of it. Practical courses are run in three shifts, which makes it hard for the students who go on at midnight. But although they cannot perform at their best, we have been doing it for years and it works, so we'll keep it that way."

Software courses run for 4 weeks, hardware courses 6 weeks, and there are an average 24 students per course.

As well as getting maintenance engineers, the customer gets a stock of spares, and can take additional spares to standard complement if he wishes. If a problem proves intractable, Robotron engineers are available to give assistance, and the Kombinat has a team of 1,000, covering mainframes, office computers.



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Videoton sales to West soar

AFTER a slow start, sales of Videoton computer equipment and services to the West are beginning to soar, and the company has scored some solid successes in West Germany where it began its market thrust. Videoton is planning to sell $180 million of computer equipment this year, up to 12% of which is to be sold in the West, and 80% is exported, mainly to other Comecon countries. But Western business, accounting for only $1 million in 1977, grew fivefold last year and for 1979, Videotnn has secured contracts worth five times that already.

Unlike its East German counterpart Robotron, Videoton chose to license Western technology as a springboard into the computer business, and has forged a close and successful relationship with the minicomputer division of CII, and its successor SEMS.

As a result, Videoton is able to offer its customers as up-to-date a minicomputer as any available, and at Hanover showed its own version of the new SEMS Mitro 225 a few days before it was announced in France.

"We are very careful not to do anything to bring us into conflict with SEMS," says Dr Csaba Bardith, exhibitions manager with Videoton. This effectively precludes straight minicomputer sales in the West, but allows Videoton to offer systems packaged with software for a particular application.

The two current Videoton minicomputers are the single-board VT 60, and the new VT 600, which comes on two boards and uses the Motorola 6800 micro in the peripherals controllers.

On the way is a version built using the AMD 2901 bit-slice micro which will appear as the VT 6000.

Half of Videoton's computer business is minis, including products like the Videoplex simple, low-coat key-to-disc system. Based on the VT 60, it supports 16 keystations, which are little more than adapted Videoton TV monitors, which helps to reduce costs. As well as being sold in the Comecon countries, these have found favour in Yugoslavia.

Videoton is still looking for Western European partners marketing minicomputer systems such as the Videoplex.

Working closely with SEMS, Videoton has contributed software development on the minis, collaborating on years the operating system, and modernising the Cobol compiler. It is also developing Basic/E machine and working on a network sharing subsystem.

In its Rjad unified range of compatible computers throughout the Socialist countries, Videoton offers the E 1011, which is based on the 600.

A larger, 370/115-like machine, the ES-1015, which is not based on SEMS licences, is to go on show in Moscow for the first time next month.

The VT 2000 series of display terminals is built around the Intel 8080, and are marketed throughout Europe by Telefon, a former Mannesmann company which is now autonomous. Videoton also sells the display in Finland and Algeria.

Videoton has sold 10,000 of the play terminals so far, and is to build 4,000 this year.

The other component of the company's computer business is OEM peripherals. It has been from Dataproducts, and also printers and other computer peripherals make up the remaining 20% of its turnover.

IN its second year of marketing computer products in Western Europe, Poland is now offering the Mera 100 office computer, shown here. The 8-bit processor, built in TTL, is, surprisingly perhaps, not a microprocessor. It comes with 8K to 64K-bytes of main memory, and is programmed in proprietary assembler, and comes with two floppy discs, full width printer, both built under license from Logabex of France, and a Surroughs plasma display. There is also a tape cassette unit of Mera's own design, and the plasma display can be replaced by a CRT.

Software available includes a range of accounting packages and text processing package, and the system is currently sold by Deplona in West Germany and Holland.

Mera is also offering a modular CAMAC Computer Aided Measurement And Control system based on the Intel 8080 and built around the new standard ACS bus.

Micro network to mimic 'foremen'

A NETWORK of micros designed to mimic the human organisation of a group of factories is being developed by Robin Woods, technical director of Taher-Woods, microprocessor specialists, of Luton, Beds.

Given the unlikely name of Mercator's Projection, Woods' system uses groups of Commodors Pets as "foremen" to supervise up to 20 Texas Instruments PM550 process controllers or to monitor laboratory instruments.

The Pets report to a factory level supervisor in the form of a cluster of two or three close-coupled minis. These would be Digital Equipment or Data General machines, or possibly Texas Instruments 9900s or DXS data exchange systems. Woods, as an ex-Texas man, is familiar with the units.

The minis would share 50 Mbytes of disc store and each processor would specialise in different tasks such as processing for various levels of management or polling to find messages or files to be passed on.

Typically, three factory level clusters report to a similar division level cluster. This would have 1 Gigabyte of disc store and handle communications between the network and the mainframe, selecting the appropriate path according to the type of link, for example, for transaction or batch processing.

Potential customers have IBM and Honeywell mainframes and Woods expects to have the Pets emulate IBM 2260 or 3270 display terminals for upward communication.

Typical systems would have about 90 Pets controlling 800 PM550s, with three factory level and one division level supervisor clusters. This could cost in the region of £1.5 million, depending on the interfaces. At factory machine level the interfaces would replace relay and analogue loop interlocks.

Woods says he is taking on people now to work on the project and thinks he is six to nine months away from his first orders.

Univac to 'buy in' advanced technology

WITH its research and development investment planned to be $167 million this year, up $9 million from last year, Univac has stated that a major part of this will be spent in acquiring advanced technologies such as Gallium Arsenide (GaAs) semiconductors, voice input/output systems, and Josephson Junction circuits.

As highlighted at a Univac seminar in Paris earlier this month, many of the technologies are a long way off, but in some areas, results are already being seen.

As previously reported (CW, May 17), Barry Borgarson, director of research and technical planning at Blue Bell, Pennsylvania, has predicted that Emitter Coupled Logic technology will give way to GaAs techniques within a decade on the company's top-end machine.

But the difficulties in manufacturing GaAs materials is such that Borgerson indicated that Univac would probably take the short route and buy in the technology from Rockwell International, a company he believes is doing good work on it.

To make the best use of new semiconductor materials, however, Univac is attempting to devise new wafer lithography techniques as well — particularly X-Ray and Electron Beam lithography.

"With electron beam etching we have already achieved submicron widths," said Borgerson, "We are hoping for one-tenth of a micron eventually. Our biggest problem is particle scattering which makes it impossible to etch a line the exact width of the beam you are using. You have to make allowances for this."

Already providing commercial income, a voice response unit, called the VRU-104, has been sold to the West German mail-order company Otto Versand. Seven will soon be installed and a further three by the end of the year.

The VRU-104 is accessed by phone lines, and customers input order information not vocally, but via a touch-tone keypad. This keypad converts electrical signals into audio tones to which the system is programmed to respond.

The nature of the response depends on what routine is being used, but all output from the VRU-104 is composed of digitised human speech held in memory, not of artifically synthesised sounds.

Regarding speech recognition, experiments are going ahead on a linguistic pattern-matching technique that will be able to accept both single words and sentences from a number of speakers. On the company's present prototype, an estimated recognition accuracy of 90% has been claimed.

IDPM tidies up merger

AT an emergency meeting of the Institute of Data Processing Management last week, members were divided as to whether the secretary-general should be elected by the rank-and-file or appointed by the Institute's council.

Held in the Bloomsbury Centre Hotel, London, the present secretary-general, Tad Cluff, argued that the holder of his office should be elected by the full voting membership. This viewpoint won the day.

The meeting had been called to tie up constitutional loose ends arising from the merger of the former DPMA and the IDP.

The rule changes agreed now mean that the council can elect honorary fellows, subscriptions are payable on the anniversary of a member's election, that changes in subscriptions can only be made at AGMs.

Amateurs' 360 may prove to be white elephant

SOUTHAMPTON Amateur Computer Club has been offered an IBM 360, but this could be more of a liability than an asset, as club president, Paul Maddison, admits that the club could not raise the money necessary to maintain it by itself.

The system could be worth several thousand pounds, but unless the club finds a sponsor with premises and backing of up to £5,000 a year it will be unable to take up the offer.

The club started three years ago as part of the Southampton University students' union, and split off last year to enable outsiders to join. Its 120 members meet at the university on the first Wednesday of each month, except for the summer break from July to September. It invites outside speakers from the micro industry, such as Paul Greenhalgh and Howard Birkett from Nascom who spoke at the last meeting.

Microcomputers owned by the members include three homebrew Z80 systems, three Nascoms, a Pet, a MK14 and a 6800 based homebrew system, but there has not been much activity in specialist groups based on each micro.

Encouragement for the big machine venture has come from the Galdor Centre in Surbiton, Surrey, which was started five years ago when four students bought an ICL 1301 for £200 in order to learn about computers. It now has two 1905Fs and a 1904E and runs overload work from other bureaux.

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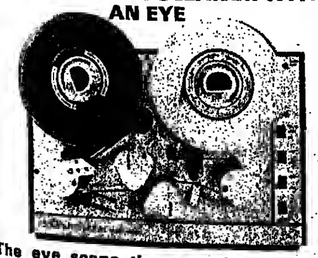

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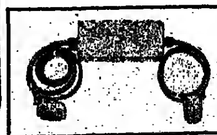

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MARKETVIEW

BY FRED LAMOND

In March, IBM announced its new 1780 telephone switching system, a smaller and much cheaper version of the 3750 that has sold in Europe since 1974. First customer installations, apart from pilot sites, in the first quarter 1980 will coincide with the general release (after PO trials) of the competing OEC SL-1, Plessey PDX and ITT Unimat atomd program controlled private automatic branch exchange announced last year, as well as of the Post Office's own COSS.

How significant are these new electronic PABXs? Do they just perform traditional telephone swhching functions faster and more cheaply? Or are they an important step towards the much talked-about "automated office" in which telecommunications converge with data processing?

In this Marketview Fred Lamond examines these questions and the relevant differences between the various manufacturers' new models.

Automated phone techniques show flexibility

THE functions offered on most stored program controlled private automatic branch telephone exchanges fall into three groups:

1. Traditional telephone line switching such as that handled by electro-mechanical exchanges.

2. Advanced telephone switching and monitoring functions which are not available on older systems but are still within the voice telephone switching domain.

3. Data collection, processing and file inquiry and update facilities. They bring some of the new PABXs closer to data and word processing.

The telephone switching functions are those that private telephone exchanges, both manual and automatic, like their bigger brothers in the public networks, have performed since telephones first appeared at the end of the last century.

The new all-electronic PABXs that have appeared on the Continent in the last three years, and are now appearing also in greater numbers in the UK, use either of two alternative switching technologies for these traditional functions.

Space division exchanges connect all incoming and outgoing external and internal lines in a three-dimensional matrix of electronic flip-flop gates, through which the stored program controller then sets up discrete paths between any calling line and the line that it is calling.

As each such live connection path does not intersect with any other live connection path on its way, the voice signals can remain AC analogue in the 300 to 3,000 Hz range throughout their path, as they do in Strowger and crossbar exchanges.

The IBM 3750 and the new 1750, ITT Unimat sold by STC, and, on the Continent, Ericsson PE, Philips EBX, and Siemens EMS PABXs are all space division systems.

The alternative technique is time division, and exchanges using this work on a completely different principle which is derived from the TD multiplexers used on pulse code modulation trunks in the public telephone network.

Each live voice line is sampled 8,000 times per second on entering the switch by a codec (coder-decoder), which turns the sampled tone into one of 256 predefined 8-bit codes, the result being a 64K bit stream. This is multiplexed with other bit streams from other active connections on a common system bus, which it leaves again on reaching its destination output gate. Here another codec remodulates its signals back into analogue form.

Time division is regarded as the telephone switching technology of the future because it is simpler, and therefore both cheaper to manufacture and easier to maintain, more compact with savings in floor space and power consumption. The British Post Office's new CDSS, GEC SL-1, Plessey PDX, and, in France, CIT-Alcatel CItedia and Télic 25.0x series, are all TD PABXs.

These differences in switching technology do not affect the ability of either type of exchange to offer more advanced telephone switching functions than the older Strowger and crossbar exchanges. This results from the fact that they are controlled by a stored program computer, rather than by the hardwired control logic of the older semi-electronic crossbar exchanges.

Stored program flexibility allows SPC PABXs to offer a host of more advanced functions such as dialling codes for frequently used numbers, both for the PABX as a whole and for extensions; teleconferencing facilities; automatic rerouting of incoming calls to a different extension on a temporary or permanent basis; "hunting" for the first free extension out of a predefined group; camp facilities on busy extensions, with automatic call-back when they are free; programmed restriction of the extensions entitled to call senior executives or long distance or international outside lines directly and there are many other facilities on offer.

The SPC PABX can log the chargeable outside calls initiated from each extension and output such information in print or on a diskette.

All the new competing SPC exchanges support essentially the same range of advanced telephone switching and monitoring functions, though they differ in the expandability (Table 1).

Since these valuable advanced switching and monitoring functions result from the use of stored program control, rather than any particular switching technique, it ought to be possible to add them with SPC to existing installed crossbar PABXs, rather than take the equipment out entirely and replace it with an all-electronic system.

Another way of preserving existing investment in old electro-mechanical PABXs is to put the required stored program functions in each extension handset, instead of in the central switching system. This is what Nixdorf has done on the 8811 Datatel, An Intel 8080-controlled telephone handset combines advanced telephone switching functions with a variety of optional data entry and output modules.

The 8811 is available to West German PABX users, but has not been type-approved by other post offices. Nor is it likely to be in the UK, as long as the British PO maintains its insistence on a rigid separation between voice telephone handsets (which must be maintained by PO engineers, even when they are connected to a PABX) and data terminals (maintained by manufacturers).

The combination of data collection and file inquiry facilities with voice telephony on a common handset as in the Nixdorf 8811 is an example of convergence between voice and data telecommunications and DP.

IBM offers similar facilities on the large 3750 switching system that it has sold since 1974, and its new 1750 announced in March (CW, March 22) but in a manner acceptable to the British PO.

The telephone handsets connected to the 1750 and 3750 are conventional rotary dial or pushbutton multi-frequency handsets identical to those now offered by the PO to all subscribers, and thus easily maintainable by PO engineers. But multi-frequency handset keys can also be used to send data entry and/or file inquiry coded signals to a computer connected to the 1750 or 3750, after the 1750 or 3750 switch has first set up a switched connection between handset and computer.

When it is a file inquiry requiring a computer response, the computer can send this via a voice output unit, which the inquirer can then receive through his telephone handset. Or it can send it to a separate alphanumeric display or printer located within the immediate vicinity of the inquiring handset.

This is not the only converging facility offered on the IBM 1750 and 3750. They can also be equipped with special interfaces for a number of other terminal units, such as identity badge readers and time clock.

The 1750 and 3750 offer special interfaces and communications protocols for all computer systems from IBM's General Systems and Data Processing Divisions.

The switching systems can send an extension user's file inquiry, or collected data, to a connected computer. The computer in turn can send dialling signals to the 1750 or 3750 to set up a temporary connection with any extension or with a distant terminal system, if necessary via the switched public telephone network.

IBM itself uses this facility for an internal company electronic mailbox system between its direct computer file inquiry facilities from ordinary telephone handsets are unquestionably useful features, however, in any office equipped with its own computer system. To only two West German manufacturers have made provision for it, apart from IBM, and their systems are not currently available outside West Germany.

The British and French manufacturers of time division PABXs have not even taken advantage of their switching method to give terminals free with direct access to the system bus, on which data throughput of up to 64K bps could be offered on the same time-slot as ordinary voice line.

It is true that in an age of ever cheaper programmable microprocessors, there are fewer and fewer arguments for sharing the control logic of a PABX among so many functions not directly related to voice telephony, as IBM does on the 1750 and 3750. And while IBM does not release such customer details, it is said that only a small proportion of its existing 3750 customers have taken advantage of the optional security and environmental control functions on their systems.

Data collection facilities, and

Instead, data terminals may be connected to these PABXs (except the TN-8030) via the same modems of up to 9,600 bps as on space division PABXs and ordinary public switched telephone lines.

It looks as if in the pioneering of the converging applications of the 1980s creative imagination and a capacity for lateral thinking is more important than telephone switching expertise, and such creative imagination is still found predominantly among systems and terminal manufacturers.

	Technology	Traditional switching: Number of lines: Trunks	Traditional switching: Number of lines: Extensions	Advanced functions: Abbreviated dialling/codes	Advanced functions: Camp on busy line	Advanced functions: Teleconferencing	Advanced functions: Restricted access	Advanced functions: Call charge monitoring	Converging functions: Data collection	Converging functions: Security locks	Converging functions: Environment control
Systems offered in Europe											
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3750	SD	48-240	248-2,000+	X	X	X	X	X	X	X	1
ITT Unimat 4060	SD	0-56	100-384	X	X	X	X	X			
4080	SD	48-400	200-2,000	X	X	X	X	X			
United Kingdom											
Post Office CDSS 1	TD	0-20	20-120		X	X	X	X			
GEC SL-1	TD	0-800	100-4,000	X	X	X	X	X			
Plessey PDX	TD	0-120	100-800	X	X	X	X	X			
France											
CIT Citadis	TD	100-1,800	1,000-9,000	X	X	X	X	X			
Citel	SD	0-150	12-1,280	X	X	X	X	X			
Ericsson PE	SD	1-2,000	2-8,000	X	X	X	X	X			
ITT Unimat 4080	SD	0-32	12-128	X	X	X	X	X			
West Germany											
ITT Unimat 4080	SD	0-32	12-128	X	X	X	X	X			
Siemens EMS	SD	2-2,000	10-12,000	X	X	X	X	X			
T&N TN-4030	SD	3-10	30-100	X	X	X	X	X			
TN-8030	TD	6-128	60-880	X	X	X	X	X	X		
Nixdorf 8811*	—	2	1	X	X				X		

Table 1. Stored program controlled PABX facilities. SD = Space division. TD = Time division.
*** Not a PABX, but an intelligent integrated voice/data terminal.**

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Low costs of programming in UK offer excellent software market

LETTER TO THE EDITOR

HAVING spent a good part of my data processing career abroad, including seven years in Hong Kong as data processing adviser/manager with the Hong Kong government (the government data processing department was set up in 1968, not the six years ago you quoted), I was interested in your article on the growth of computer utilisation in the colony (CW1, April 26).

The main reasons for the rapid increase in computer utilisation there over the past 11 years was the rapid economic and social expansion which started in 1968 in the wake of the cultural revolution of 1967 combined with a shortage of skilled staff and the inability of the existing mechanisms to handle the escalating amount of work generated by this expansion (eg a 12-fold increase in the number of examination papers over a two-year period from 1968 to 1976). While the high quality of Chinese programmers did contribute to the rapid expansion in computerisation, the grave shortage of quality experienced staff actually inhibited development.

I would agree with Lee Tate and Richard Wilstead, that, on the whole, Chinese programmers are excellent but, before Alex d'Agapeyeff et al pack their bags and hot foot it to Hong Kong, let me sound a cautionary note about the feasibility of establishing a software development presence there.

Costs are much higher in Hong Kong than in the UK. Programmers' salaries are high, and even taking into account a possible higher rate of productivity, the longer working week (42 hours standard) and a willingness to work long hours, the unit labour cost is higher than here. In addition, office accommodation rentals are astronomical (on a par with downtown New York), hardware costs (purchase or rental and maintenance) are considerably greater and the costs of communication are a not insignificant element.

In 1968, largely on my recommendation, one of the world's largest (US-based) airlines established an application software production unit in the colony. It was closed down in 1971 because the overall cost of the programs written by Chinese programmers in Hong Kong was than greater than those written by American programmers on the Western seaboard of the States.

In the laisser-faire economy of Hong Kong where government regulation and interference is minimal, it would be very easy to set up a software company. This may not be the case in other possible locations. An attempt by a mainframe manufacturer to set up a software factory in Singapore in 1964 was killed stone dead by the intransigence of the immigration department there and a subsequent effort to establish one in India was frustrated by the dead hand of the cumbersome Indian bureaucracy.

The computer Press has recently reported that ICL and Systime are considering subcontracting software development to India. These moves led Jim Donaldson, president of CSA, to comment that CSA did not have a protectionist view of its market and could not object to firms taking advantage of programming rates abroad. I don't think that Jim or his CSA members have much to worry about on this score.

My own recent experiences have led me to believe that the costs of programming in the UK are now about the lowest of the developed nations. Consequently, there is an excellent market for the UK software industry in the production of software in the UK for Western European, American, Japanese and Middle East organisations (hardware manufacturers, software houses and end users).

Of the developing nations, only in India are the necessary manpower resources and facilities available and costs lower, but the advantages could well be offset by the inherent difficulties of Indian operations.

G. B. THOMSON
CAP (UK) Ltd,
London

US small firms go for IBM-compatible market

A GROWING belief that the future of the commercial computer industry is based on IBM-compatible software has caused a blossoming of small US companies all keen to get a share of the action.

The market leaders and pioneers are Amdahl Corp and Itel. Amdahl's 470V/8 to V/8 line covers IBM from the 370/158 to way beyond the 3033, while Itel's AS series goes from the 4341 to the 3032, with an attached processor option which approaches the power of the 3033.

All the other contenders are competing in the middle and low end of the mainframe market.

Two Pi and National Semiconductor each produce a bit-slice machine with minicomputer architecture and performance comparable with that of the 370/138. Kardios offers the Quo 70, based on the Interdata 7/32, and Quo 80, based on the 8/32, and matching the 370/138 and 148 respectively.

The forthcoming offerings from Cambridge Memories are also mini-type machines; called the CM-100/1, 2, and 3, they match the 370/115, 125 and 138.

The Magnuson M80/32 matches the 370/148 and the M80/42 and /43 cover the 4341.

The Magnuson line is fully field-upgradable and features what Magnuson terms "strategic architecture", which means that the same basic modules can be mixed and matched to configure a wide variety of different machines, theoretically with interchangeable instruction sets.

IPL Systems makes the Omega 480s marketed in the US by Control Data. They have a unibus architecture, which makes them field-upgradable through the line. The 480-I matches the 138, the 480-II the 148 and the 480-III the 168.

Nanodata matches the 135 with the VMX200 and the 148 with the VMX400; the machines are a complex of processing units rather than a single processor. The main memory is central to the system, and is surrounded by several "execution processors", each of which can be microcoded with a different instruction set.

The complex is completed with one or more input-output processors, which can simultaneously link to several instruction processors, and a supervisory processor which controls the operation of the whole complex.

Citel is planning to cover the power range of the 138 to 3033, but is still in the start-up phase.

Language translator arrives

NOW available in the UK is the Lexicon LK-3000 pocket-sized language translator (CW, February 1). It provides, for about £150, limited translation from English into languages such as Spanish, Greek, French and German. Stock phrases are called up and linked together before the machine can give a translation on its one-line display, so the variety of words that can be used is limited.

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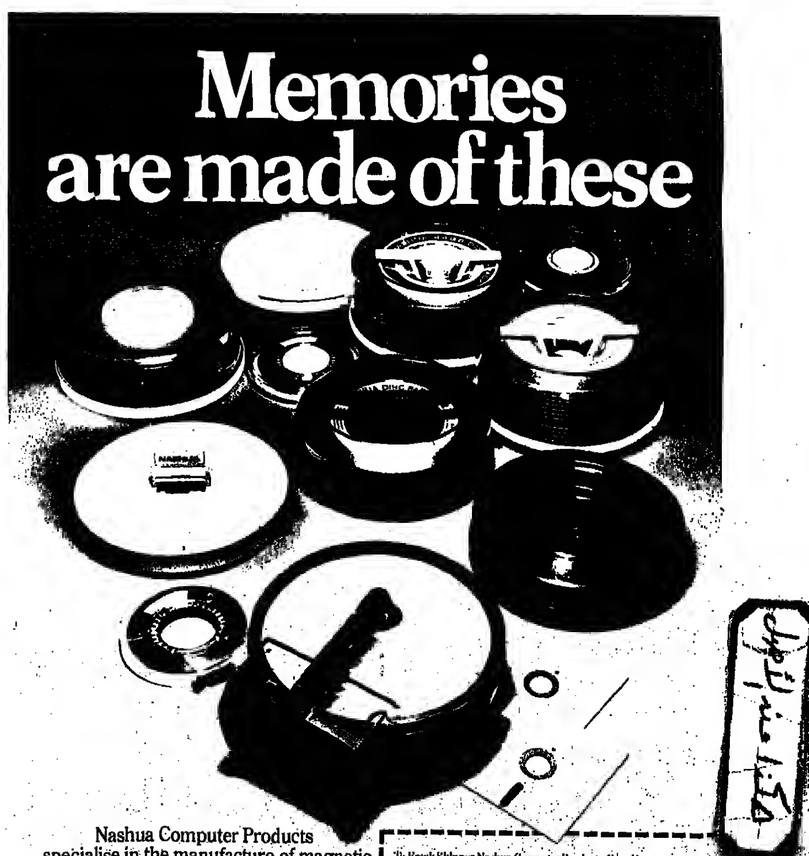

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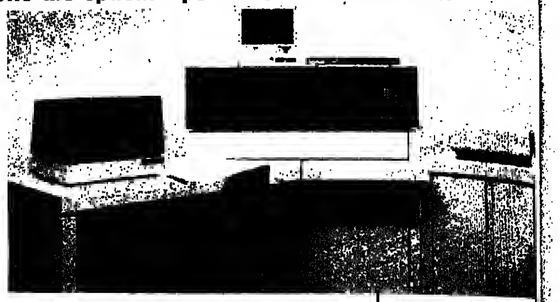
ARE you aure your computer system is giving you the performance it ehould? Many users are deciding they can no longer afford to take this for granted, and are turning to performance meaaurement techniquea in order to gain greater control over their operationa.

NICHOLAS ENTICKNAP haa been inveatigating the value of performance measurement, and in this article reviews the optiona open to managers of both large and small syetems. In a second article, to be publishad next week, he will report the experiences of uaers.

Is your performance up to scratch?



One of the Teadata range of hardware monitors is pictured above. Named tha MS88, it cost nearly £150,000 and has 144 probes.

PERFORMANCE meaauremcnt is on thc increase. Languid programmers, tired DPMs and verbsl Casanovas need not take fright at this chilling Orwellian pronouncement: for it is not human beeings but computers that are coming under evar greater scrutiny.

In general, the performancc of computers has hitherto becn taken for granted — as long as they have continued to churn out reams of paper and miles of magnetic tape at n satisfactory rate of knots.

The computer manufacturers themselves have been largely responsible fnr thia; the more inefficient a computar is, the murc memory, discs and so on it will nued, and the more revenue the manufacturer gets.

Users have accepted this, relying on their own gut feelings to tell them if anything is drastically wrong with the way their systems are running.

It has proved a good working principle and, as ignorance equals bilss, who cares about 10% in effliciency when the system is doing all its owner requires of it?

Talk to performance measurement consultants, however, and you will find that a mere 10% efficiency is by no means always the case. I was told of one installation, which had three processors, where 60% of the jobs required re-running fnr nne reason or another. Both the DPM and the operations manager were quite happy with this state of affairs.

But there are a number of reasons why performance meosurement is attracting greater interest today, and why installations which are not yet in the swim should give some thought to what they might get out of it.

The first is that, despite the much-vaunted continuing reduction in hardware costs, it is more or less an axiom of computer usage that the total cost rises year by year.

Staff costs of course are rising at a rate at least equal to the rate of inflation (recent surveys suggest it may be more) the number of transactions being handled by each application expands as the business does, and the number of applications itself steadily increases.

All of this means that many organisations now have a very sizeable investment in computers. An installation which has a hardware value reckoned in seven figures is not that uncommon. Andeven 10% of seven figures is a saving well worth trying to achieve. There are of course corresponding cash flow benefits to be had.

Computer systems are not only growing in value. They are also getting much more complex, and therefore more difficult to monitor by instinct alone. The advent of data communications and database management systems makes efficiency much marc difficult to determine.

Then again, the very pace of development is a complicating factor. IBM has upset the applecart twice in the past two years with the announcement first of the 303X series and then of the E seriaa, both of which have substantially altered accepted views of what you can expect in the way of cost-performance.

To understand what is needed, what is desirable and to make sensible plans for future growth, it la vital to have a clearer understanding of what exactly the present syatem is doing.

All of theae factors combine to emphasise the importance of control. In order to maintain control over his installation, and to reduce his dependence on outside factors such as the activities of IBM, or simply the pressures his friandly neighbourhood salesmon is imposing on him, the DPM naeds more information about what his computer is actually doing. Performance measurement is a way of getting this information.

It should be noted that this is essentially managerial rather than technical motivation. This is borne out by the experiance of Scott Yasler, president of the European Computer Measurement Association (Ecoma) who has observed a steady increase in management delegates at the Association's regular conferences.

Yasler also points to a growth in interest in performance measurement by corporate auditors, whose objective is to ensure that the company's money is being well spent. An auditing group of the Association was formed about a year ago and has flourished since.

This is a far cry from the days not so long ago when performance measurement was tha province of boffins, and the tools simply toys thnt management gave them to play with in a bid to keep them quiet.

Nowadays the emphasis is very much on the financial benefits to be gained from postponing upgrades or simply from avaiding expensive mistakea.

The earlier references to data communications and database systems may have put off the user of smaller and less ambitious systems, but the principles apply just as much to him.

Obviously, the more expensive the installation the easier it is to justify the cost of measurement tools and the staff to run them. But, correspondingly, the smaller the configuration the less information you naed to maintain control.

David Lankey, one of Logica's team of performance measurement specialists, estimates that the effort you need to make costs proportionately the same, whatever the size of the inatallation.

He concedes that there is a certain minimum ovarhead involvad in the cost of any tools that are purchased and of the staff time involved. But even for the user who does not feel he can justify the investmant in any proprietary prdduct, he recommends that certain basic taaks are carried out.

First, he saya, you should measura the amount of time the system is up, as a proportion of scheduled up-time. Then you should keep track of the ratio between useful and non-useful work.

In this context development work counts as useful; nonuscful work means runs that failed, etc. Finally, you should make some sort of continuous assessment of throughput.

How this is done depends very much on the type of workload. A good rule of thumb, says Lankey, is to measure jobs done per hour. A hetter measure is the amount of user CPU time, if this can be obtained.

Whatever the measure, there are likely to be massive variations day by day, week by week and month by month, so care is needed in interpreting the findings.

These basic measurements require an investment solely of staff time. For that you get a better understanding of how the computer is performing, earlier warning of the build-up of pressures, and information which can be halpful in the diagnosis of problems.

Staff time is of course always at a premium, and performance measurement activity tends to get postponed when more immediate problems arise.

Lankey alao recommends that, when installing a new application, it is worth going through the arithmetic to calculate what the theoretical run time should be, and comparing it with the actual results.

The two figures are unlikely to be the same, for reasons relating to the dasign of the program, the role of the operating system and so on, but if there is a large discrepancy it is a sign of trouble.

The move to more sophisticated techniques is best preceded by a visit to a consultancy, unless the installution has staff with experience gnthered elsewhere.

In practice, consultants are usually called in either because the installation is undergoing a crisis and needs bailing out fast, or because a major decision-point has been reached, and n second opinion is required to counter-balance the view of the hardware vendor.

In the process they will use special tools known as hordwnre nnd software monitors.

The objective is to find out how effectively the rcsources of the system nre being uaed, a task which involves analytical ond interpretative skills as well as the appropriate equipment, which is why professional help is desirable for the beginner.

Let us look at these tools in a bit more dctail, starting with software monitors. According to Scott Yasler, thesa are increasing in popularity compared with hardware monitors, and there are a number of reasons for this.

First, they are much cheaper with a basic of investment of typically £10,000 a throw, compared with slightly more for the most basic of hardware monitors, and 10 times that for a really sophisticated system.

Secondly, the data they provide is more readily comprehensible, or, put another way, requires less interpretation. You are measuring not just occurrences of phenomana, but getting answers relating to the file and job concemed.

As against those advantages a software monitor, by virtue of sitting in the system, does impose an overhead on the system's performance, which has to be taken into account and in the past was a major disadvantage because of its impact on throughput.

This is less of a problem today when ninin memory is measured in Megabytes, and the degradation experienced has diminished in the cnse of for example MVS systems, to insignificant proportions.

Another disadvantage is that software monitors, unlike application packnges, are very dependent on the operating system and very vulnerable to changes the manufacturer may make in it.

On the other hand, a software monitor requires less expertise to use; bnsically you just load it. And unless it is new on the market, you can feel confident that the results you are getting from it nre sensible.

There are a number of manufacturers which sell software monitors, though it should be said that most of them are for IBM users. Users of other equipment will either have to make do with packages provided by the supplier, or set to and write their own.

A good example of the kind of product that is available is provided by CPP, which markets a range of packages developed by the US company Boole and Babbage for IBM users.

These products include Cadisigned to measure what is CPU is doing, how busy its channels are and so on. This information fed to a point where one can see what CPU time is going, so that the user can save CPU cycles; another DSO which looks at disc head movement activity with a view to enabling the re-ordering of data sets so as to minimise head movement.

These products are all designed for use under OS: MVS users CPP has another, CMF, which is similar in concept but differs from it in having a real time option, allowing users to see what's going on minute by minute rather than waiting for historical report.

To give an idea of TSA prices, Cue and TSA each with various optional features cost each, marketed individually, £10,000. An MVS package comprising CMF, TSA and others costs about double that.

The commitment any particular user should adopt will depand on his configuration and his circumstances, with the main critarion being value for money.

If you can't see an advantage, don't do it. If you can, an initial cautious exploratory approach will usually be best.

A good atart is to contact some other users. In a follow-up article we shall report the experiences of a cross-section of users we have contacted. The reader may also like to contact the only body in Europe which devotes itself to performance measurement.

This is the European Computer Measurement Association. Ecoma. It holds regular conferences at which all aspects of performance meaaurement are discussed, the next one being held in Paris in early October.

Readers who are intarested in thia event, or in the Association generally, should contact Nick Kenyon of Logica, at bis office in Little Portland Street, London, W1, or Scott Yasler, tho European Computer Measuramant Association, Scheuzerstrasse 5, 8008 Zurich, Switzerland.

Users must know what to measure

MOVING onto hardware monitors, these are devices which measure electronic activity taking pince in the system, by means of probes, and then report it in some way or another.

It is essential, therefore, that the user knows what he is measuring — in other words, where to put the probes — before he can make any sense at all of the output.

Given this expertise, a hardware monitor is more flexible than a software monitor, as you can measure whatever you like rather than what has been preprogrammed.

The expertise, however, is critical; to quote Bytheway again: "A good analyst can use a £10,000 monitor and get 85% of the information the average chap could get from a £100,000 monitor."

There are only two suppliers of hardware monitors in Europe, Comten and Tesdata. Comton is the older — it holds several basic patents — but until recently has not been very active in Europe, and consequently has much the smaller market share.

Its equipment is cheaper, being based on a tape controller and transport, and relying on the host mainframe for analysis of the data collected. Comten itself supplies the software for this purpose under the name Dynapar.

Tesdata's equipment is based on Interdata minicomputers, and therefore is more expensive on the other hand, it will do more. A comparison of the basic systams in each company's range may give an idea of the potential.

Comten's basic system is the 8010, which performs 16 basic time and count functions, nod records the collected data on magnetic tape for subsequent mainframes processing. This costs about $25,000. (Comten's list price is in dollars; translate into pounds or whatever is your currency at today's exchange rate.)

Tesdata's range starts with the MS32, a mioicomputar-based system equipped with diskcttes for recording the measurements and with a DECwriter for printing the analyses. The system will both record and analyse, but not both at the same time. Prices start at around £40,000.

In general, however, hardware monitors are becoming the province of the big installotion, and both Tesdata and Comten talk most enthusiastically about their top-end systems, which are designed for users who wish to undartaka in-depth analysis on a ragular basis and maintain a databosa of past results.

This is in hormony with the general trend away from troubleshooting towards capacity planning, away from finding out where you are towards estimating where you're going to be.

Tesdata's top-end offering, the MS88, can set you back nearly £150,000, and even a basic system costs £85,000. It comas with no less than 144 probas, enabling you to measure an enormous amount of information at the same time.

Historically, the most popular simulator for IBM machines has been Skirt, a product which is no longer marketed but is still maintained for a small number of users by tha US company, PSI.

A new simulation technique has now been pioneered by tha American, Jeffrey Buzen. He calls it operational analysis, and what that involves is the application of queueing theory disciplines to computing.

The advantage of this approoch is that it permits a much higher level of approximation, which means that much less data needs to be collected. How much less is up to tha user.

Tha run time is also less (of the order of a few minutes instead of a few hours) which meana that interactive modalling can be done, testing out various different parameters to determine which are the most critical.

Buzen's techniques are marketed through his own company, BGS Systems inc in the US, and through Logica in the UK.

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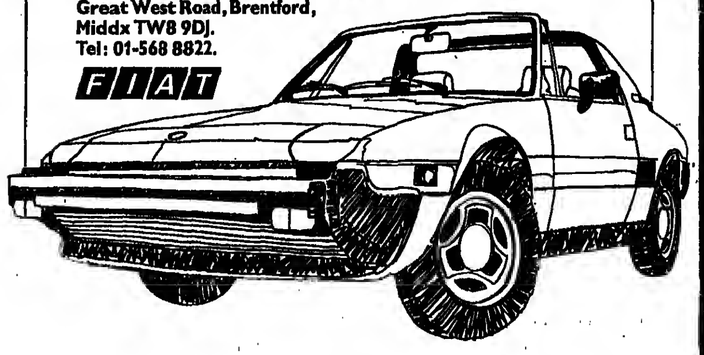

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Salaries will be in the range £8,000-£9,000, coupled with a comprehensive benefits package, and relocation expenses will be met by the Company where appropriate.

TO APPLY, please write briefly, listing name, address, age, home and office telephone numbers and career history to date including current and previous employers, in complete confidence, to ANTHONY SPURR, Executive Selection Division, quoting 720/INV/PROD or 720/COST/FIN as appropriate. Applications from either sex.

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York House, 199 Westminster Bridge Road
London SE1 7UT
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Features	Benefits
★One of the leading Computer Service Bureaux in the UK.	★Large existing customer base offering real development potential.
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★Nationwide communications network.	★Nationwide sales potential.
★50% growth in 1978.	★Outstanding career development opportunities.
★Stable, professional sales force.	★Opportunity to participate in strategy and policy making.
★Sales team exceeded quota by 80%.	★Immediate high income assured.
★Projected '79 growth 50%, projected quota increase 25%.	★Natural income growth gearing.
★Superb technical support, with high sales awareness.	★Impressed prospects and satisfied customers.

If you feel that this describes the type of organisation that you are looking for then we would like to meet you for a preliminary discussion. Please telephone or write to Kevin McCourt quoting Reference 2381.

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123, New Bond Street, London W1Y 0HR 01-499 7761

JBA

European Technical Support Manager

Amsterdam

The European Marketing Centre of one of the world's leading manufacturers of information display and graphic systems wish to appoint a Technical Support Manager.

The successful candidate will liaise between the marketing centre and subsidiary companies (and distributors), assess all product parameters with respect to market demands and make relative and comparative studies on competitive products. Conventional management responsibilities will form a large part of the job, together with providing assistance and guidance to product support managers, sustaining a highly efficient technical support service and keeping in close contact with all hardware and software technology.

Applicants must have a technical degree (or equivalent) plus over six years software engineering experience with minicomputers and mainframes in systems software and FORTRAN based applications. At least two years direct management experience of a medium sized group in marketing support, software maintenance or project development is sought. English fluency essential and another European language desirable but not mandatory.

Very attractive salary and benefits, including relocation package.

Contact: Mike Cresmer
JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1.
Telephone: 01-491 4478.

BARSON

SYSTEMS ANALYSTS/PROGRAMMERS Major Consultancy wants well experienced Analyst/Programmers. Peter Barson Ref 201	**LONDON £6,000-£12,000**
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COBOL PROGRAMMERS Learn On-Line & Data Base. David Ward Ref. 205	**CRAWLEY, WEST SUSSEX o£6,500**
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TELEPHONE: 01-839 6087 **Peter Barson or David Ward**	**BARSON, TAYLOR & WARD Computer Personnel Consultants 107 Jermyn St. London SW1**

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1 year's Fortran?

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We are starting new projects in the fields of process monitoring and control using mini-computers and require young programmers, male or female, with potential and ambition who wish to gain valuable experience in real-time computing.

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Marconi Avionics Limited, FREEPOST, Elstree Way, Borehamwood, Herts WD6 1BR. Tel 01-953 2030 ext 3491. Please quote reference MA 79082.

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A GEC-Marconi Electronics Company

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Enthusiastic Systems 34 Programmers who would like to earn in excess of £11,000pa

Phone or write to Norma Baxter at 01-953 4066

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REPTARD

UNIVERSITY OF LONDON

SENIOR ASSISTANT LIBRARIAN — SYSTEMS ANALYST

Library Resources Co-ordinating Committee

A Senior Assistant Librarian — Systems Analyst is required to develop, implement and maintain computerised housekeeping services for the Libraries of the University. Candidates should be experienced in library work or in the field of computing, with an interest in the application of computers to library management.

Salary in Grade IIB range of Senior Library Staff £8,586 - £9,482 per annum under review) plus £802 London Allowance.

Further particulars and application forms obtainable from the Personnel Office, University of London, Senate House, Malet Street, London WC1 7HU. Tel. 01-636 8000, ext. 15. Closing date 22nd June, 1979.

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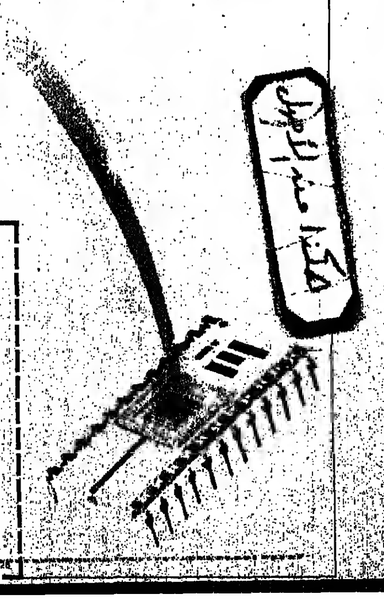

GEC Traffic Automation Limited (Freepost)
Elstree Way, Borehamwood, Herts WD6 1BR.

Name
Address
Home Tel No.
Office Tel No. (if convenient) Age
Present Company
Position held

Years of experience
√ Box
☐ 1-2 ☐ 2-3 ☐ 3-4
☐ 4-6 ☐ 6-8 ☐ 8 & over

Language experience
√ Box
☐ Babbage
☐ Intel Assembler
☐ Coral 66
☐ Fortran
☐ Others (Please specify)

Qualifications
√ Box
☐ Degree or Equivalent
☐ HNC or Equivalent
☐ 'A' Level Maths
☐ 'A' Level English

Present salary
√ Box
☐ £3000-£3500
☐ £3500-£4000
☐ £4000-£4500
☐ £4500-£5000
☐ £5000-£6000
☐ £6000-£7000

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Systems & Applications Programmers
Up to £10,000 now plus bonus
Technical Interviews-London, Manchester, Leeds, Liverpool, Birmingham, Stafford.

UK based oppurtunities exist for programmers with the right qualifications or potential to earn £8,000 to £10,000 now, and up to £16,000 after two years. These are long term positions, most of our staff have been with us for over five years. In our dynamic and flexible environment, career development will be upwards or across or into new areas such as Sales or Marketing.

The company

Allergo Software Limited is one of the world's most successful suppliers of software products to users of IBM 360/370, 303X, 4300 and compatible mainframes.

We develop, implement and maintain some of the most advanced and efficient products available on the world's markets. To complement the quality of our products, we provide technical support of the highest quality to ensure that our users obtain the maximum benefit from our systems. Systems such as the SHADOW II teleprocessing monitor; the GUTS Time Sharing, Text Editing and CRJE system; the QUOTA II On-Line Source Program Library and Maintenance system; the CPG On-Line Program Generator; the OPUS On-Line Order Processing system and the DATA-MAN Report Generator.

The job

Continuing rapid expansion means that we have opportunities for technical staff in both our London and Stafford offices to join following teams. Full relocation assistance will be given.

PRODUCT DEVELOPMENT

As a member of the development team you will be involved in the development of new software products, the development of new features or enhancements to existing products or the implementation of existing products on new IBM or IBM compatible mainframes and other advanced devices.

As part of one of the most creative software teams in Europe, you will have the opportunity of working in project teams or alone, gaining from and contributing to the wealth of experience of this friendly and highly motivated group of technicians.

Development work is all on-line using our 3270 and silent-700 terminals.

SOFTWARE SUPPORT

You will have the responsibility of maintaining the company's well earned reputation in this all important aspect of software marketing.

You will be involved in pre-sales advice, guidance and consultancy, post-sales product implementation and training. You will also be in close contact with users and our Agents worldwide, identifying, reporting and solving problems.

As a member of the support team you will enjoy considerable job satisfaction in a flexible, extremely interesting environment. The scope for extending your knowledge and experience of a wide variety of systems and installations is virtually unlimited. Your knowledge of our products, user base and user requirements will also provide you with the opportunity to transfer to the development team in the future.

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The TP Applications team will provide you with the opportunity to work on a variety of new SHADOW II applications for customers. You will also be involved in advising and aiding U.K. and overseas clients in the conversion of their systems from other T.P. monitors such as CICS, to SHADOW II. The wide range of applications environments of some of the most advanced installations in the U.K. will provide invaluable experience for programmers who wish to advance their careers rapidly.

The skills

SYSTEMS PROGRAMMERS. A good working knowledge of teleprocessing in a DOS or OS environment is required. Assembler experience is essential. COBOL, PL/I and/or Database experience are all added advantages.

APPLICATIONS PROGRAMMERS AND SENIOR PROGRAMMERS. A strong Assembler background is required if you wish to join the Development or Support teams.

For the TP Applications Group you should have On-Line Applications experience in either Assembler, Cobol, PL/I or RPG II.

The rewards

Salaries well above the industry's level. Significant annual bonus. Full relocation expenses for the right people. Regular opportunities for travel overseas — U.S.A., Canada, Europe. Full product training. Half yearly salary reviews. Friendly informal environment. Continuing job interest. Dynamic and reward-oriented company.

MAKE A CAREER WITH THE MARKET LEADERS.

Interviews will be held from 21st MAY in London, Manchester, Liverpool, Leeds, Birmingham and Stafford.

Our Development and/or Support managers will be available to discuss your career opportunities.

As a first step to arrange an interview in your area, please send your c.v. to, or telephone quoting CW21:
Pat Baker, Allergo Software Limited, 5th Floor, Imperial House, 15-19 Kingsway, London WC2B 6UN.
01-836 9075.

altergo

Computing Services Association

BUSINESS SYSTEMS SALES
£10,000 + Car
Applicants must have sales experience probably related to small business systems although Analyst/Programmers with pre sales support experience will be considered. N. SURREY

MINI or MICRO ANALYST/PROGRAMMER **£8,500**
Small business systems or manufacturing environment experience a distinct advantage. Location London till relocating to N. SURREY

SYSTEMS ANALYST **C. £7,000**
PROGRAMMER/ANALYST **C. £5,500**
A commercial organisation with an ICL 2980 DME mainframe using COBOL requires people with a maximum of 2 years experience to join a friendly OP team in London, W1.

PROJECT LEADER **C. £8,000**
SYSTEMS ANALYST **C. £6,500**
ANALYST/PROGS. **C. £6,000**
PROGRAMMERS **To £6,000**
The above staff are required to make positive contributions to the development work in a large OP installation based in N. SURREY

SENIOR PROGRAMMER/ ANALYST **To £6,500**
A British subsidiary of a major European company with world wide connections is seeking a Programmer/Analyst with COBOL Experience, and management ability. The installation is an IBM 370/158. Location SW LONDON

ANALYST **C. £6,000**
A prestigious company with world wide operations is seeking a young Systems Analyst to design and implement production/accounting applications. A year's analysis experience or Analyst/Programmer experience is essential. SW. LONDON

OPERATORS **£4,200**
2 years experience required on ICL 2900/2900 running under GII + IBM 370 experience considered 3 shift system. City

If you are interested in any of the above posts, please telephone for an application form. Alternatively if you are seeking a position in an area we have not listed above, please telephone for details.

AMES PERSONNEL
Employment Agency Suite 1d Dryden Chambers, 119 Oxford Street, London W1R 1PA Tel. 01 434 1106

Deputy Shift Leader
Up to £5018 (incl. shift pay)
A vacancy exists for a suitably experienced operator in a computer bureau running a 2 shift ICL 2960 under both VME/B (including TP) and DME/S4.

Operators with at least 2 years' experience under either VME/B or System 4 3 level could find this a satisfying opportunity to further their career towards shift management in an expanding and progressive environment.

Application form from the Chief Executive, 50 Woolwich New Road, London SE18 6HQ (Tel. 01-854 8683, Ext. 2034).

Closing date. 15th June, 1979.

The Council is an equal opportunity employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

SENIOR ANALYST PROGRAMMER
A vacancy has arisen within the computer department of this multiple shoe retailer with 200 branches, for a person with the following qualifications. Honeywell Cobol, DOS, 2,000/native (operating systems), wide experience of commercial applications with emphasis on stock control. Ability to communicate internally and externally with people at all levels. Communications end data based systems would be an advantage.
The department at present runs a Honeywell 64/16 and Alpine OCR machine, and offers job satisfaction, good working conditions and competitive salary.
Applications in writing or telephone to:
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726 Old Edinburgh Road
Bellshill, Lanarkshire
Tel. Bellshill 746331

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The ideal candidate will have two years' experience of systems analysis and programming with some of that time on accounts work. A working knowledge of accountancy is essential. Applicants should be capable of working on their own initiative and of clear communication.

We offer a competitive salary and the usual benefits associated with a large financial institution

Write or telephone for an application form to: Mrs E. Watts, Personnel Manager, Cornhill Insurance Co. Ltd., 57 Ladymead, Guildford, Surrey GU1 1DP. Tel. (0483) 66181.

Cornhill Insurance Group

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Assembler language or ICL System Ten experience an advantage but not essential.

Earnings £6,000-£7,000 p.a. plus company car.

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IBM OS VS1 **£4600**
6 mths + exp for City Bank. Fast promotion for the right applicant. Excellent perks

IBM OS VS1 **£4400**
370 op required for Croydon company with recently installed 3031.

IBM OS VS1 **£5500**
Shift Leader with 2 yrs + exp required by Middlesex based installation.

IBM OS VS1 DAYS **£5500**
West London Company seeks operations analyst. Sud ex op with good OS JCL.

IBM 370 DAYS **£4500**
Operator with some JCL knowledge required to take control of sys 34 to be installed shortly.

IBM DOS VS **£4800**
East London co. requires operators with 6 mths+ experience. 2 shifts only.

ICL 1900 **£5500**
Shift Leader required with 2 years + GII exp. Good Macro knowledge. 2 shifts only.

ICL 1900 **£4600**
Chance to learn 2960 at this large C.London installation. 6 mths + ICL + required.

ICL 1900 **£4200**
6 mths+ exp required by bureau. Excellent prospects include move to programming.

ICL 2900 **£4300**
Shift leader required with 1 yr + 2903/4 exp. 2 shifts only.

TECHNICAL CONSULTANT
C. London **C£10,000**
For people interested in the Software House environment there are currently vacancies in the Real Time and Communications fields within one of the best companies in London.
You should have 5 years experience in either massege switching applications, sales support, PDP 11's, turnkey systems or data communications and wish to progress into a Technical Sales/Sales Support Role.
The company offers an excellent salary plus e full pension scheme, interest free season ticket loans, L.V.'s staff purchase facilities and a house purchase scheme. **Reference HK 22/1**

JUNIOR FORTRAN PROGRAMMERS
West London **to C£4500**
A well known company in the Consumer industry currently needs several Junior Programmers who wish to build for their own future.
The minimum experience required is just 6 MONTHS FORTRAN programming on any mainframe or mini.
Training in systems Analysis will be provided and exposure to mainframes (an IBM 370/138), mini computers (on Prime 300's) and micro machines, will all ensure a wide range of experience and a 1st class choice of career prospects in the future.
01.439.7871 **Reference HK 22/2**

BASIC+/BASIC+2 PROGRAMMERS
City **to C£8000**
A well known Software House based in the City are currently seeking BASIC+ & BASIC+2 Programmers to work on their growing range of applications, covering both the Scientific & Commercial areas.
A minimum of 12 months Basic+ 2 or 18 months Basic+ is required and any knowledge of DEC Hardware would be advantageous.
The company offers very good salaries with other benefits including a bonus scheme.
Reference HK 22/3

ANALYST/PROGRAMMERS
West End **to C£7000**
An International Pharmaceutical company based in the west End with a range of MINI's and Mainframes in key locations throughout the U.K. are seeking Analyst/Programmers with a minimum of 1 years Analysis. A knowledge of CORAL 66 would be ideal but retraining will be provided to applicants with good programming and analysis experience.
They offer competitive salary plus all the fringe benefits you would expect from a company of their size and standing.
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HONEYWELL GCOS DAYS **£4500**
Op with 18 mths+ experience prof on Honeywell required by South London installation.

BURROUGHS B6700 **to £5600**
1–3 years Burroughs medium systems exp for this large site. Good promotion prospects.

HONEYWELL GCOS **£4650**
Operator with 6 mths+ exp for this 2 shift working installation.

NCR 84 **£4500**
Chance to learn Criterion if you have 1 yr + NCR experience. Prel. 84.

DEC PDP **c£4500**
South London installation requires operator with 1 yrs experience. 2 shifts only.

UNIVAC DATA CONTROL **£4000**
Central London installation requires a Data Control clerk with knowledge of Univac JCL.

ICL 1900/2900 DATA CONTROL **£3300**
Any Data Control experience for this company in West London. Flexi-time. Age 25+.

ICL 2904 DATA CONTROL **£3500**
1 to 2 years exp in Data Control environment. Days only.

HONEYWELL DATA CONTROL **£3500**
North London installation requires a Data Control clerk with 1 years experience. Could progress into programming.

IBM OS DATA CONTROL **£4400**
9 months exp either operating or in Data Control for this centrally based company.

SENIOR COBOL PROGRAMMERS
West London **to C£7000+ Benefits**
A major retail group with an expanding installation is seeking several Senior COBOL Programmers with a minimum of 3 years ICL 1900/2900 experience.
The Company operates a retail distribution system with considerable real time involvement, thus offering the opportunity for people with solid experience to gain valuable Real-time exposure.
They offer very good salaries with considerable benefits including staff discounts, non contributory pension and a subsidised staff restaurant.
Reference BP 22/8

JUNIOR COBOL PROGRAMMERS
City **to C£6000+ Mortgage**
A major financial organisation operating a twin ICL 1900 series installation is seeking several Programmers with a minimum of just 12 MONTHS' COBOL.
The Company is involved in a number of new financial systems so any experience here, although not essential, would be more than welcome.
In return they offer very good salaries, 60p per day L.V.'s, 4 WEEKS HOLIDAY, and a 32½HOUR WEEK, and if that is not enough than consider their 3% MORTGAGE scheme!
01.439.7871 **Reference BP 22/9**

JUNIOR SYSTEMS ANALYST
City **C£6,500+Mortgage**
A major financial organisation operating an ICL 1900 installation which will be updated to an ICL 2960 by the end of the year, is seeking a junior Systems Analyst who is looking to expand on their current experience.
The minimum requirement is 18 months' systems experience gained on any hardware. A programming background would be useful although not essential.
The Company offers a very good starting salary together with extremely good fringe benefits including a 4 % MORTGAGE, BONUS, FREE LUNCH, season ticket loans, non-contributory pension etc.
Reference BP 22/10

SYSTEMS ANALYSTS
City **to £7000**
A major finance company based in the City wishes to recruit additional staff to work on the development of new projects for their expanding IBM 370 system.
The individuals they are seeking will have at least two years Analysis and must have implemented one major system. Any knowledge of CICS or PL1 would be a distinct advantage.
In addition to a highly competitive starting salary the company offers an attractive benefits package and excellent working conditions.
01.439.7871 **Reference BP22/11**

OPERATIONS SUPPORT
Sidcup **to £5000**
A large International Organisation based in an easily accessible part of N.W. Kent is currently looking for staff at various levels for their expanding technical support department. A minimum of 1 years operating or data control experience is required, preferably with some IBM OS JCL knowledge, although this is not essential.

The installation is linked via a Data 100 network to a large 370/158 running under OS/VS1. The technical support department operates a flexitime system and therefore this is an ideal opportunity for operators to move from shift work into an interesting and demanding days only position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

01.439.7871 **Reference MH 22/5**

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PL1 PROGRAMMERS
West End **to £5500 + Mortgage**
A leading commercial organisation with an expanding 370/135 installation in the West End is seeking a number of PL1 programmers to work on a variety of new and existing projects.
The positions are ideal for enterprising young programmers with at least twelve months experience on IBM Hardware. A knowledge of OS/VS1, although not essential, would be a distinct advantage.
The company offers a first class salary, and fringe benefits include Flextime, Season Ticket Loans, and a Subsidised Mortgage. **Reference BP 22/6**

COBOL ANALYST/PROGRAMMERS
C. London **to C£6500**
One of the country's largest retail organisations is seeking several people with a COBOL background, but with an interest in other languages.
They use a 370/145 & have development projects for a 3031 in COBOL, ASSEMBLER & DL1, & you will need around 18 MONTHS or more in any of these languages.
Any Analysis or D/B experience would be helpful, however, training will be provided, making this an ideal opportunity to diversify your career.
01.439.7871 **Reference BP 22/7**

Datascene Recruitment Ltd.
Sceptre House
169-173 Regent Street
London W1R 7FB 01-439 7871

datascene
Computing Services Association

Datascene International Ltd. Telex: 25851
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[illegible] DENMARK
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PDP Programmers with TRAX eg transaction system. 3 months' initial contract.

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£550 p.w.

RSXIIM systems progremmer to work on a packet switch project end system internals. Preferebly knowledge of French, Germen or Dutch.

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CEXC

Leval 6 expertiea with T.PS: combined UK + USA project.

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Singer system 10 expertise is needed with stella packege experience.

TECHNICAL ENGINEER
£500 p.w. BRUSSELS

Teleprocessing, writing functional end interface spacifications.

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DEC PDP using Fortren under RSXIIM: Treffic control project. 3 months' initial contract.

[illegible] GERMANY

Smell businass systems experience. Preferably knowledge of low level protocols Initially 3 month contract.

[illegible]

Benking experience. Project planning softwara documentation. Knowledge of COBOL. Preferably lerge meinframa exp. Fluent French.

[illegible] WORLD-WIDE

Motorola 6800 with MPL Assembler 3 monts initiel contract.

[illegible]

Kn. of Protocols X25 HDLC exp of 7 leval protocols. Convorsant at all level managament.

[illegible]

PDP Mumps exp. commerciel applications 1 yeer project.

[illegible]

SYS 3/RPGII exp. commerciel applications. Maintananca and development. 1 year + assignment. Fluent French.

[illegible]

Implementation experience on man-machina interfaca vie visuef display.

[illegible]
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Working on PDP II herdwera. Expert knowladge of RSXIIM. To instell RSXII at inatallation.

PROJECT MANAGER
[illegible] & AMERICA

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Knowledge of work processing systems and their functions.

PLEASE CALL 01-734 0152/734 3078 and ASK FOR THE CONTRACT DIVISION

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★ Discretionary bonus
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★ Sports and social club — Subsidised bar!

Major group with subsidiery companies oparating internetionelly end manufecturing a wide renge of sophisticetad industriel equipment hes exciting futura plans. Reteining IBM 370 herdwere, thay are currently instelling CICS and heve verious projects plennad including e major financiel one. A mini computer is efso being instelled for e Midlands depot, with support from London.

Chief Systems Anelysts is sought to work in capacity of PROJECT MANAGER and will be expected to heve eround 7 yeers' D.P. experience in sny environment, but with e good busineea ecuman. ANALYSTS will heve slightly less experienca. PROGRAMMERS with 2-5 yeers IBM OS COBOL experience will have opportunities to anhence their career.

[illegible]

Ref. 2031

CITY

PROJECT MANAGER £8,500
ANALYSTS £7,000
PROGRAMMERS £6,500

★ Subsidised Mortgage
★ Cheap Loans and Banking facilities
★ Non contributory pension and Life Assurance Schema
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Get into banking! This mejor internationel bank has suparb opportunities to join an exciting environment with naw development work. Our client reteins en IBM 370 with major new herdware on order and offers TRAINING in CICS. They require e PROJECT LEADER with management qualities, good communicetion skills and benking systems exp. praferebly in foreign exchange or investments. The ANALYSTS ere required to join NEW PROJECTS in the initiel steges of design. PROGRAMMERS with at least 2 years' COBOL era needed to work on many financiel epplications. For the enelysts end programmer all positions offer fantastic scope for learning new skills end career progression.

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A RARE OPPORTUNITYf Due to repid growth within mejor group services divieion, there ere now various openings for career-minded D.P. persons. Retaining ICL 1900 equipment, Co. hes racently avalueted new herdware, has large mini computar-baaed natwork and utiliaee TOTAL DBMS.

PROJECT LEADER: Succesaful candidete will heve had 5 yeers' systems experience, e profeasional epproach to project menegement and ability to communicete et all levals. He/she will have full responaibility and cover whole spectrum of project control.

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Ref. 2041

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Our client, sn internetional communications group, has racently set up e second-mejor D.P. dept. It hes been craeted to deel spacifically with the business and financial arees. It hes IBM 370 which runs under DOS and CICS will be usad shortly. Compeny has exciting futura plens and offers all new devalopment work in stimulating internetional environment. Programmers with at leest 18 months' COBOL (on any herdwere) here is your opportunity to develop, with super prospects to get into systems analysis. 1 year's analysis experiance with COBOL is all you naad for the anelyst programming poaitions. If you are a systems analyst with wide DP experiance end good IBM background — PHONE NOW!

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OFFICES: LONDON, MANCHESTER, BIRMINGHAM, HOLLAND, FRANCE
RECRUITMENT CONSULTANTS

OCC

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

PARIS – LONDON

Our clients are a Multinational company with corporate offices in Paris and an established company in London.

The following vacancies are available.

PARIS
Analyst/Programmer
80,000–90,000 francs p.a.

We are looking for one, or possibly two experienced persons with a mini Real Time Systems background in commercial applications to work on new application projects. Candidates must be self motivated and able to work on their own. A basic knowledge of French, sufficient to read documentation and to communicate with the French teams is also required. *Ref: 511/CW/RN.*

LONDON
Analyst/Programmer
£5,000 –£7,000 p.a.

The London vacancy could be filled by a less experienced person with a minimum of two years Real-Time mini progamming. *Ref: 512/CW/RN.*

For all vacancies a knowledge of Hewlett Packard 3000 or PDPII systems will be a distinct advantage as would previous experience on accounts or shipping applications.

For an informal discussion or to apply for any of the above vacancies, please ring Renée Nute on (day) 01-242 9356 or (evenings and weekends) on 01-874 6372.

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB

Members of Computing Services Association

Computer Operator

£3,900 – £4,300
(currently under review)

BICC, a major British group with over 100 sites both at home and abroad, are seeking a Computer Operator (male/female) for our Regional Computer Centre based at Wallington, near Croydon.

The centre, which provides a DP service to the Group's member companies is equipped with an ICL 2903 with data communications facilities operating on a 2 shift system.

Ideally candidates should have at least 12 months operating experience on a 1900 series installation but consideration will be given to people of lesser experience.

Conditions of employment are attractive and commensurate with a large multi-national company.

Please telephone or write to:

Mr. D. Blinkhorn,
Regional Controller,
Kelvin House,
London Road,
Wallington,
Surrey SM6 7EH.
Tel: 01-669 4477 Ext. 329

BICC

Contract Programmers-Analysts

If you thinking of doing contract work why not start here by registering now for immediate and forthcoming requirements.

For further details contact:
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XOREN

Computer consultancy & software specialists

REAL-TIME MINI SOFTWARE SPECIALISTS
£6,000-£9,000

Xoren Computing Ltd., is an independent UK-based software house specialising in systems design and programming of real-time minicomputer and microcomputer systems.

The Company has experience of carrying out projects in the following fields:

BASIC SOFTWARE — Operating Systems, Compilers, Linkers, Debug Packages, Text Editors, Spooling Drivers.

COMMUNICATIONS — Telephone Systems, Message Switching, Data Collection, Concentrators, Terminal Emulators.

PROCESS CONTROL & TELEMETRY — Pipeline Control, Alarm Monitoring, Outstation Simulation, Materials Testing.

The Company possesses its own POP 11/34 computer which is used in-house for software development.

Applicants should have a sound knowledge of real-time systems and experience of at least one mini-computer or micro-computer type and write to or telephone Mr. J. Jarvis

Xoren Computing Ltd.
28 Maddox Street
London W1R 9PF
Telephone: 01-629 5932

£10K+ APPOINTMENTS

pages begin June 7

Ring Eddie Farrell 01-261 8097

MINI COMPUTER MANAGER

Salary £8000 c. Plus car

A substantial marketing orientated company based in Essex is seeking a first class computer professional to develop, manage and implement substantial changes to its computing facilities.

The brief will involve choosing a new computer and creating a small team of specialists and to develop and implement new systems for the 1980s.

The right candidate (male/female) will need a creative and hard working mind.

Please respond in writing to the Managing Director, H C Marshall, Nor Systems Limited, Valley Road, Harwich, Essex CO12 4RR.

NOR

NORCROS

INTERSIL INTERSIL INTERSIL INTERSIL INTERSIL INTERSIL

TECHNICAL SUPPORT ENGINEERS

Intersil a leading manufacturer of IBM plug compatible memories requires additional engineers for its expanding European support operation.

Suitable candidates will have considerable in-depth experience of maintaining mainframes and will preferably be trained to specialist level on an IBM CPU, or related plug compatible memories.

Successful applicants will be working mainly from home as base. They will be prepared to travel to any part of Europe in order to support Intersil clients.

Proven ability will be well rewarded along with excellent fringe benefits.

Peter Hopeland

MYRIAD
HOLLAND

An expanding data processing department in AMSTERDAM wishes to recruit U.K. expertise to strengthen their project teams developing a variety of commercial systems on IBM 370 equipment. The department is also responsible for implemehting international systems and providing extensive user training in relevant areas.

ANALYSTS
To £15,000

- ★ GOOD EDUCATION
- ★ 2 YEARS' PROGRAMMING
- ★ 1 YEAR + IN ANALYSIS
- ★ IMPLEMENTED ONE MAJOR SYSTEM
- ★ FINANCIAL/ACCOUNTING EXPERIENCE

PROGRAMMERS
To £10,000

- ★ 2 YEARS' D.P.
- ★ COBOL 1 YEAR +
- ★ PREFERABLY IBM OS
- ★ COMMERCIAL APPLICATIONS
- ★ GOOD BASIC EDUCATION

Salaries will be commensurate with experience and FULL ACCOMMODATION will be provided during the first two years of employment.
Our client is renowned throughout the world for its products and is by far the market leader in a very specialised field. These vacancies offer U.K. personnel an exciting opportunity to enjoy the high standard of living in Amsterdam and be ideally situated for visiting other European countries.

REF. S1/3105/CW

ANY COMMERCIAL LANGUAGE

N.W. LONDON c £7500

Exciting opportunities have arisen in our clients installation for experienced Senior Analyst/Programmers and Analyst/Programmers to play a major role in the company's continued expansion plans.

The installation comprises a medium range IBM computer and RPGII will be used for all the new systems to be developed, many of which will be on-line. Ideal applicants will be able to offer a minimum two years' business experience having used ANY COMMERCIAL LANGUAGE and possess the potential to progress within an expanding organisation.

Successful candidates will be given formal training where necessary, after which they will join teams developing sophisticated systems ranging from warehousing and distribution to management information using the latest techniques and equipment. For more experienced applicants opportunities exist to lead projects.

In addition to the career progression available a range of company benefits make these exceptional opportunities.

Ref. N1/3105

SENIOR SOFTWARE DEVELOPMENT PROGRAMMERS

NEAR WINDSOR c £9000

Two first-class career opportunities have now arisen within the U.K. division of an American based computer manufacturer, currently extending and enhancing software for its very successful range of computers.

The people appointed will be given responsibility for the development of software in one of the major product groups and will work in small self-motivating teams utilising on-line programming and dedicated hardware facilities.

Applicants will need to demonstrate a sound assembler level mainframe or mini computer background, ideally combined with data management methods and operating systems experience and should possess a progressive and innovative approach to software development.

In line with the very competitive starting salary the company is able to offer a very pleasant working environment and all the usual benefits associated with a successful business operation.

NW1/3105

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981

We're successful because our staff are

Data Logic operates at the forefront of computing, applying the very latest hardware and techniques to practical commercial problems. We cover the range from mainframes to the smallest computers. We are leaders in the use of microprocessors for applications that not so long ago required far larger machines.

Many of the systems we supply go far beyond providing extra speed and cost savings. They will revolutionise the way the user organisations operate. Several projects involve dispersed networks of ten or more minicomputers. Our largest turnkey system incorporates twenty-three machines and close to three hundred display terminals across the country — a totally new system which will serve almost every function within a leading company. A new police contract involves the first use in the UK of a mini for a complex data retrieval application — with our own advanced methods for rapid, generalised record searches.

The exceptional scope and quality of work is important to our staff. We can match their individual experience to their projects. Equally, we can ensure that each project adds to their experience. As computing itself develops, so do they.

Over the past year Data Logic has grown dramatically in size, in scope of work and in reputation. Our expansion has meant unrivalled opportunities for career progression. We are not prepared to promote people before they are ready for it. But when they are ready — and we give all the assistance we can — the positions as senior programmer, senior analyst, project manager and consultant will be there waiting for them.

The reason is simple. We know that we are successful only if our staff are.

Senior Software Staff

(Ref PS/01) For mainframe, minicomputer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design or team management. Substantial knowledge is required of either high level language implementation on a leading mainframe or assembler language development on DEC, Data General or other leading minicomputers. We are especially interested in experience of:

- database systems
- distributed systems
- data communications
- telemetry
- operating systems design and implementation.

Salaries will be highly competitive and a company car is provided to staff at senior team leader level or above.

There are vacancies at our Greenford, Birmingham and Manchester offices.

Programmers

(Ref PS/02) For both mainframe and minicomputer projects which include commercial applications, monitoring and control, and scientific analysis.

Applicants should have at least three years programming and/or analysis experience in high-level language or assembler on any leading mainframe or minicomputer.

This is an outstanding opportunity to gain experience in the development of complex high performance software. Our programmers work in small teams, taking considerable responsibility for distinct areas of the total system.

Salaries will be highly competitive. Vacancies exist at our Greenford, Birmingham and Manchester offices.

Write or call, quoting the appropriate reference number:
Kathy Martin
Data Logic Limited
29 Marylebone Road
London NW1
01-486 7288

A Raytheon Company

Data logic

Open Day Central London 5th June

Words can only convey part of Data Logic's unique atmosphere. Meeting us will tell you far more. Come and discuss the opportunities we have for you at our open day at the Strand Palace Hotel, The Strand, WC2 on Tuesday 5th June. We'll be there from 11.30 a.m. to 8 p.m. There will be drinks and light refreshments and the sessions will be informal.

JBA

GERMANY

Operating Systems Specialists

£20,000 – £30,000

Several of our clients still seek operating systems expertise, preferably with a variety of machines viz IBM, DEC, UNIVAC, CDC, etc.
Work involves the design, program, test and installation of virtual machine operating systems and support software. The ability to design and implement software for an OS/MVS – type operating system is particularly desirable.
Programming is in assembler and high level operating systems languages.
JBA would like to talk to anyone involved with operating systems, even post-graduates involved in research or similar. **Contact: Mike Creamer**

Prestel/Viewdata Specialists

from £20,000

Immediate vacancies exist for consultants who have considerable experience of information transmission systems, such as Prestel, Viewdata, etc. Data communications expertise and database knowledge is vital to the positions, particularly where concerned with large mainframes and front-end processors. A user contact background is desirable.
Our client is one of the largest consultancy organisations in the world with over 3,000 employees. On this solid foundation, the company offer real up-market remuneration packages and excellent relocation assistance. Further, the prospects of continuation of projects at very senior levels in a worldwide market place is virtually second to none. **Contact: Mike Creamer**

Senior Systems Analyst

Hampshire **up to £8,400 + mortgage + benefits**

This is a senior position combining project control and technical management of analysts and programmers engaged on vital work within a rapidly developing insurance company. With the installation of a database and TP system the position will offer tremendous opportunities for a senior analyst to diversify and expand technical experience.
Applicants must be from a business COBOL applications environment, having preferably come up through the ranks to a leadership position, and be looking for a job with more responsibility and prospects. Immediate interviews will be arranged for suitable candidates.
Tremendous employment and relocation package is offered, effectively increasing the base salary to a surprising level. **Contact: Mike Creamer**

Communications & Control Systems

All Areas **c £9,000**

This client is fast building an unsurpassed reputation for the excellence of its technical ability and expertise in the development of advanced systems and software. They require a number of high-calibre technical staff to augment their team, in order to undertake the increasing volume of new orders for software development.
There is access to a wide range of mini and micro machines in-house, such as PDP11S, NOVA 3, HP1000, micro NOVA, INTEL and ZILOG, providing an ideal "workshop" for those who enjoy a hands-on environment.
Projects to be staffed full in to the following broad categories:-

- **Message and line Switching**
- **Data Communications**
- **Command and control**
- **Automation**

Ideal experience would be of Real-Time mini and micro environments and Assembler programming. Some knowledge of high level languages such as FORTRAN or CORAL is a distinct advantage. In general, however, drive, intelligence and adaptability are more important than specific machine technique or applications experience. **Contact: Margaret Stevens**

Communications Programmers

Berkshire **up to £7,500**

We have been requested by our client, part of a well-known computer manufacturer, to recruit several programmers to participate in the development of communications and network systems.
Applicants must have several years experience in programming with the last two spent implementing software for systems where data is being transmitted over a network. Knowledge of the standard protocols and switching techniques would be an added advantage.
Excellent salaries for the right experience. **Contact: Jim Baker**

Systems Analyst

Lake District **c £8,800**

We have been retained by a chemical processing organisation, a leader in high technology, to recruit a Systems Analyst to work on the development of technical d.p. applications. Candidates should have a good degree, preferably in the sciences, followed by about five years in a computer development environment. Since the work includes program specification a background of programming would be an asset. Current projects include the collection and analysis of specialised data, mainframe and mini-computer systems.
This is a positive opportunity to live in delightful countryside and work on sophisticated applications. Excellent salary and benefits including relocation assistance and attractive allowances. **Contact: Jim Baker**

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W.1. Tel: 01-491 4478

We're looking for . . .

FALMER Jeanius

Falmer Jeans is one of this country's most successful manufacturers of leisure wear, and as part of our continued programme of expension we have the following vacancies in our newly-established computer department based in **Rayleigh, Essex.**

2 PROGRAMMER ANALYSTS

c £5,000 p.a.

A Burroughs B1830 is currently being installed to handle all applications from Order Processing through Production Planning, Stock Control and Accounting. We now require two Programmers to design and implement the next phases of this development which will involve a considerable amount of liaison with user departments.
All systems will use the latest developments in on-line data base techniques using Cobol as the application language. Suitable experience in all these areas will naturally be an advantage.

COMPUTER OPERATOR/ TRAINEE PROGRAMMER

c £3,500 p.a. (No Shifts)

For this position we require a young person with the experience and technical ability to exploit the potential of a sophisticated on-line computer system. It is planned that full training on Burroughs hardware will be given, leading on to further courses covering Cobol programming and database techniques.

For further details contact:
Adrian Cubitt
Telephone No: RAYLEIGH (0268) 773633
Ext. 214
Falmer Jeans Limited, Brook Road
Rayleigh, Essex

BURROUGHS L9000 OPERATOR

Required for leading West London Auctioneers and Estate Agents based in W.12. Salary negotiable.

Please contact Willmotte, 01-743 4444. Ref. TMHM for further details.

THE UNIVERSITY OF LEEDS DEPARTMENT OF CHEMICAL ENGINEERING

REAL-TIME DATA ACQUISITION AND CONTROL

Applications are invited from suitably qualified candidates for the temporary post of RESEARCH OFFICER in the above Department. The Department is committed to the continued development of computer based methods for real-time work in teaching and research as well as interactive and batch computation. The successful candidate will be required to assist in support of projects involving both the design of hardware and software for an integrated system for the Department and also co-ordinating with other related activities in the University. A good deal of the activities up to now have been on minicomputers using computing equipment from Data General, Digital Equipment and IBM but it is anticipated that microprocessor based systems will become centrally in the planned expansion. The appointment will be made with effect from 1 October 1979 for a fixed period of three years.

Salary at an appropriate point on the IA scale for Research and Analogous Staff (£4232-£7149) (under review), according to age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 69/79/AA. Closing date for applications 6 July 1979.

Computer Shift Operator for ICL System 10

for Pershke Price Service Organisation Limited, sole U.K. agents for many of the leading German print and print origination equipment manufacturers, including some of the latest computer controlled seperation and photo-composition systems.

You will be working on your own on a shift system that does not include night work, operating our ICL System 10 which is used for a variety of applications.

Salary up to national average, excellent benefits including subsidised canteen and sports and social club.

For an application form just contact the Personnel Manager, Pershke Price Service Organisation Limited, Dover House, 141 Morden Road, Mitcham, Surrey CR4 4XS. Tel. 01-648 7090.

PPS PERSHKE PRICE SERVICE ORGANISATION LIMITED

Senior RJE Computer Operators

ICI are looking for two experienced RJE operators to work a two shift system in the busy computer terminal at Head Office.

The successful candidates will each be in charge of RJE operations on a large new CMC Sovereign System now being commissioned. This is an ideal opportunity for them to gain a detailed knowledge of equipment capable of communicating with a number of large IBM mainframe computers simultaneously and thereby enable them to become an integral part of a rapidly developing area of technology.

It is essential that applicants should have relevant experience of operations and transmission equipment and the ability to work under pressure in a service bureau environment.

In exchange, we offer an excellent starting salary, shift disturbance allowance, profit sharing scheme, pension fund, recreation club facilities including squash courts, and a subsidised canteen.

For more information please apply to Miss June Nichols, Head Office Staff Section, ICI, IC House, Millbank, London, SW1P 3JF or telephone 01-834 4444

ICI

Applied for 15/6

Analyst Programmers

£22-28,000 pa

The Howard Organisation is expanding its European software activities, particularly in the European sector, and requires several analyst/programmers with at least one year's experience of Interdata 32 (under O.S./32MT) and not less than 5 year's general Real-Time mini experience.

Qualifications to degree level are necessary. Successful applicants will be required to work in Germany for approximately 2 years and will enjoy very attractive employment conditions.

Contact Geoff King at the address below quoting Ref. GWK 180479 for full details or telephone 01-953 4066 (office hrs) or Aylesbury 630606 (7-9 pm evenings).

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£4210-£4634

To operate, on a 2-shift system, a 192K 1904S running under the GEORGE 3 operating system. He/she must have at least 18 months' experience, have common sense, initiative and a willingness to play a full part in operating present and future applications. In September 1979, the Authority will be taking delivery of a 2960/72 system operating under OME and VME/B. Conditions of service include 35-hour week; 22 days' annual leave plus 10 statutory days; staff restaurant; season-ticket scheme.

Written applications, giving age, full details of education and career to date, to the Computer Services Manager, Computer Centre, Town Hall, London SW18 2PU by June 8.

LONDON BOROUGH OF
Wandsworth

Internal Consultant

c£9,000

A major British manufacturing company achieving vigorous growth offers a practitioner, of the highest calibre, career entry solving business problems in the financial, marketing and production fields.

You must have achieved significant success in the practical application of O & M, Computer Design and/or Operational Research techniques either as a specialist or combined with other skills gained in line management. This will be allied to an intellectual capacity measured in academic terms by a good degree, possibly augmented by post-graduate studies. Your numerate qualifications and project leader capability should indicate management potential. Excellent conditions, in a 'blue chip' company with headquarters in the South, include help with relocation.

Men and women are invited to write, in confidence, under ref: 1566/ALD/CW detailing age, qualifications and relevant experience to:—

Robert Lee International
Management Consultants Limited
24 BERKELEY SQUARE, LONDON W1X 5AR

Baric Where your career develops as fast as your skills

Baric is already one of Britain's largest computer bureaux, providing a fast and efficient service to commerce and industry. Being jointly owned by ICL and Barclays Bank, we have the resources we need to make sure our current expansion plans are a continued success.

As an experienced Operator, male or female, you could have a major part to play in our future. At present we have two 1904S's and 1904A, a 1902T and a 2970, and in addition we are introducing exciting new developments like our DATACARE system of terminal based distributed processing.

Shift Leader
£5,000-£6,000 + 41% shift allowance

You will have had at least five years experience of shift management gained ideally in a commercial multimachine environment. You should be completely familiar with GEORGE 3 and/or 2900 equipment under VMEB, and have experience of COMMS, and preferably of working with a bureau.

Senior Operators
£3,500-£4,400 + 41% shift allowance

You should have had at least two years experience, including GEORGE 2, GEORGE 3, or VMEB. Familiarity with COMMS is essential.

Operators
£2,800-£3,700 + 41% shift allowance

If you are familiar with the operation of ICL equipment we can offer you excellent prospects and a real chance to develop your experience.

The excellent salaries are substantially increased by the allowance which is currently under review payable for working our four-shift system, which allows us to give 24-hour, 7 days a week service.

Prospects within our growing organisation are excellent, and your career progression should be as rapid as the development of your skills.

To find out more contact Peter Strode, Baric Computing Services Limited, Forest Road, Feltham, Middlesex. 01-890 1414.

BARIC

Internal Consultants

Computer Systems Audit/Security

London based, to £10,500 + car

These vacancies arise through promotions within a function recognised as providing excellent and varied prospects of career advancement. Our client is a multinational manufacturer and distributor of business equipment and supplies. Successful candidates will be members of an internal consultancy team providing international management at all levels with a professional appraisal of operations methods and an assurance of the integrity of current systems. Candidates, probably 27-35, must be graduates with at least 3 years in EDP systems management, ideally with IBM equipment. A full understanding of business problems associated with large scale systems development is vital. For one of the vacancies experience of security technology is preferred. There is about 30% travel, mainly overseas.

N.P.S. Lilley, Ref; 22134/CW.

Male or female candidates should telephone in confidence for a Personal History Form to:
LONDON: 01-734 6852, *Sutherland House, 5/6 Argyll Street, W1E 6EZ.*

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Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE and SHEFFIELD.

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BANBURY, NORTH OXON

'PROBLEM SOLVING' PROGRAMMER

As an initial 12 months contract, we require the services of a PROGRAMMER, TRAINED IN ASSEMBLER LANGUAGE, to take responsibility for the running and expansion of the administrative systems, currently programmed on Tu our Nindorf 8M/45 equipment. This post could suit someone keen to start or develop their commercial experience.

Due to promotion the post is open now.

We have a very open mind on salary level. Please advise your assessment of the person's worth.

For more details, please contact initially Val Howard at TEAMWORK (Agency), on 0295 53449/53440, or write to 73/74 High St. Banbury OXON (Licence No. SE/A/3742)

COMPUTER PERSONNEL APPOINTMENTS LTD.
Career Specialists and Consultants for
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or Tel 01-328 7251

Northampton Borough Council
Finance Department

Senior Systems Analyst

SO1/2 — £6232-£6060 p.a. (inclusive of supplement)

Applicants for this challenging and interesting post should have approximately 3 years' experience in Systems Analysis and be capable of undertaking new projects from beginning to end.

The Council operates an ICL 64K 1902T Computer with disc and tape backing, on-line video and cash receipting terminals and key-edit magnetic tape input. The communications network is in process of expansion.

Starting salary will be commensurate with qualifications and experience.

Temporary lodging or travelling expenses; disturbance allowance; assistance with removal expenses and estate agents'/solicitors' fees in approved cases. Housing accommodation may be available.

Application forms are available from the Chief Executive and Town Clerk (Personnel), Northampton Borough Council, 81 Derngate, Northampton NN1 1UW. Telephone Northampton (0604) 34061, Ext. 593.

Completed forms to be returned by not later than June 11th, 1979.

OPERATIONS SUPPORT

(Off-Shift)

CROYDON **Salary up to £5,200**

THE JOB

A vacancy has arisen within our IMPLEMENTATION CONTROL SECTION for an OPERATIONS IMPLEMENTATION ANALYST, this position would suit an experienced SENIOR OPERATOR/SHIFT LEADER wishing to further their career in operations. Responsibilities include evaluating all new application systems from an operational aspect, creation of operating documentation and JCL, maintenance of current systems and trouble-shooting in operational problem areas.

THE PERSON

He/she will have, several years' experience preferably in an IBM operating environment, a knowledge of DOS JCL and an appreciation of operating procedures. A responsible attitude and firm personality are necessary requirements as the successful candidate will have to deal with all levels of staff in both the operations and systems departments.

THE COMPANY

We, the Alexander Howden Group, are a major insurance organisation with a large D.P. department based in CROYDON, currently running an IBM 370/148 and 370/145 under DOS/VS. A large CICS controlled teleprocessing network is operated utilising many of the latest techniques including Data Basa and VSAM. Future plans include implementation of VM & conversion from GRASP to POWER.

We offer a comprehensive training plan, pleasant working conditions, excellent fringe benefits, L.V.'s and good salary.

For further information please write to.
Marie Esaden, Howden
Management & Data Services Ltd.
Ringstead House, Whitehorse Road, Croydon
or telephone 689 6851

McDowell, Knaggs

COMPUTER RECRUITMENT, TRAINING AND CONSULTANCY

SCIENTIFIC, TECHNICAL & ENGINEERING DISCIPLINES

SALARY RANGE £4000 p.a. - £7500 p.a.

For installations in **GLOUCESTERSHIRE, WORCESTERSHIRE** and the **W. MIDLANDS** require staff for Computer Systems Design, Hardware Design and Modification, Modelling, Simulation, etc., on the following types of applications:

Rocket propulsion, aircraft head up/head down displays, computer typesetting, circuit board/diagram design and analysis, aircraft weapons systems, C.A.D., gas turbine engines, automatic test equipment, computer aided engineering, digital control systems, airborne applications and micro-processor techniques.

Candidates should ideally have a numerate degree or equivalent, but the right attitude, personality and type of background is more important. They should in addition have the capability of solving technical problems involving design and programming, be self-motivating and have the desire to work in a challenging, informal environment as a member of a small compact project team on state of the art technology — including micros.

Languages used include **FORTRAN, BASIC** and Assembler and the Hardware includes **PDP, PRIME, GEC, D.G., ZILOG** and **T.I.**

If you would like to work in any of these geographic locations and your qualifications and ambitions are suited to the above then phone Don Knaggs on Worcester 427077 (Bewdley 400036 evenings and weekends) or write to **THE MOUNT, 1 ST. JOHN'S, WORCESTER.**

OXFORD POLYTECHNIC
Computer Centre

PROGRAMMERS
(Salary £3732-£5073)

A number of new posts for Programmers have been created in the Computer Centre of Oxford Polytechnic.

At present the Centre's main computer is an ICL 1903T, running MAXIMOP and GEORGE 2, but a major new interactive system will shortly be ordered for delivery during Summer '79. The two most commonly used programming languages are FORTRAN and COBOL. There are, however, many students and staff wishing to use or experiment with all the newer high level languages. We are looking for both systems and applications Programmers for work in most of the 15 departments, and in support of the administration. If you feel capable of working in this demanding environment using your skills to help others, write for further details to:

The Deputy Administrator
Oxford Polytechnic
Oxford OX3 0BP

SITUATIONS WANTED

PROJECT MANAGER/ BUSINESS ANALYST

10 years' experience in computer systems studies (industrial, commercial and financial systems), and implementation, bilingual English/German, now resident near Ulpoo, seeks challenging new appointment in W. Surrey. Box 1981, Computer Weekly.

Success creates new opportunities in Sales & Service

Modcomp is one of Europe's leading suppliers of mini computer equipment, particularly in the industrial process control and communications field. Over the last eighteen months, we have doubled our installed client base, introduced new product lines and established manufacturing and software development in the U.K. We have ambitious plans for continuous growth over the next eighteen months and need the following key people to join us in achieving this.

European Service Manager

Expansion of the European organisation and resultant internal reorganisation has created a requirement for a senior manager within our European Customer Service Division. This is a key position requiring a strong manager capable of establishing operating procedures and reporting mechanisms to run a multi million pound field service organisation. This involves local field service, national support, depot repair and customer service acceptance activities across several European countries. The role will be Wokingham based but will involve some travel to Europe and our headquarters in Florida.

Ideal candidates will probably already be experienced in running a field service organisation in a systems house or manufacturer of processors or peripherals. Essentially he/she must have the potential to grow with the organisation.

Sales Manager, Scandinavia

Modcomp intends to establish a direct sales operation in Sweden during 1979. We need a highly competent Sales Manager to be actively involved in setting up the new office and to spearhead the expansion of our existing sales market. This involves the support and development of existing OEM's as well as the identification of new OEM and major end-users throughout Sweden, Finland and Denmark.

Essentially this individual will be a sound business person well able to demonstrate a successful track record of sales management in the mini computer market, particularly in Scandinavia. Fluency is required in Swedish as well as a good grasp of English and a willingness in relocate, if necessary, to the Stockholm area.

Service Manager, Scandinavia

Increased sales activity, increased client base, means we need a Customer Service Manager to work closely with the Sales Manager, to ensure a successful operation in Scandinavia. Specifically he will be responsible for the development and organisation of all service department functions, both hardware and software. This will also involve determining terms of business for marketing service department activities, establishing reporting procedures and developing training programmes for clients and own staff.

This individual must be capable of working on own initiative and currently will already hold a senior supervisory role in a field service environment. He/she will be familiar with processors, controllers and peripherals, either mainframe or mini. Again fluency is required in Swedish and a working knowledge of English, also should be prepared to move to the Stockholm area.

Company benefits are excellent for all these roles including competitive salary and company car.
For application form or further details contact ANNE CAMPBELL on 0734 788711
or send detailed resumé to MODCOMP, MOLLY MILLARS LANE, WOKINGHAM, BERKSHIRE.

MODCOMP

Real-Time Mini + Micro

Our client, a major International Corporation, has openings in several of their U.K. and E.E.C. offices, including Central and Greater London, Hants, Cheshire, Holland, Denmark and Germany. In particular they are seeking Senior Analysts and Programmers, Project and Team Leaders and Systems Designers to work on projects including: **Process Control, Communications, Military systems, Modelling, Simulation etc.**

Ideally your hardware experience will embrace either PDP11, D.G., Interdata, Intel 8080, Zilog Z80 or M6800 and your languages include Assembler with either Coral 66, Pascal, Basic, Fortran etc.

Whilst a degree in Computer Science or equivalent would be advantageous, emphasis will be placed firmly on depth-of-experience and potential.

A full benefits package will be offered to complement a very attractive salary (overseas up to 60% higher) and many positions qualify for a car. Expect to negotiate around:

£6.5-10K + Car

MATRIX

Avon House, 360 Oxford St., London. WIN 9HA. Tel: 01-491 4636 Telex: 28800 Londof G.

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datascene

SALES CONSULTANT

JOIN OUR PROGRESSIVE

CONTRACTS DIVISION

THE AREA OF DATA PROCESSING YOU ARE CURRENTLY WORKING IN IS NOT AS IMPORTANT AS SALES EXPERIENCE OR THE ABILITY TO SUCCEED IN A SALES ENVIRONMENT.

THE CONTRACT MARKET IS HARD AND HIGHLY COMPETITIVE. YOU WILL NEED TO BE RESILIENT, RESOURCEFUL AND EXTREMELY SELF-MOTIVATED.

IN RETURN WE WILL OFFER YOU RELEVANT TRAINING AND SUPPORT, AN ATTRACTIVE SALARY PACKAGE, PLUS A COMPANY CAR, AND AN OPPORTUNITY TO DEVELOP YOUR OWN AREA WITHIN OUR FAST EXPANDING ORGANISATION.

WE WANT A WINNER, NOT A SURVIVOR, SO IF YOU HAVE THE CONFIDENCE TO SWOP YOUR JOB FOR A CAREER,

TELEPHONE OR WRITE TO

BOB EDWARDS, CONTRACTS MANAGER,

QUOTING REFERENCE NO. DI/007.

Datascene Recruitment Limited
Sceptre House
169-173 Regent Street
London W1R 7FB
01-439 7871
24 hour answer phone

SUB-EDITOR

Electron, the weekly megezine for the UK electronics end electronics user industries requires s sub-editor.

We ere looking for someone who can edit end layout copy et a fast pece.

Ideelly, epplicants will elreedy heve some journalistic experience on e technicel publicetion. However those currently working in electronics who wish to breek into publishing will be considered.

Salary up to £4,900 and £210 reading allowance.

Telephone or write to Berrie Nicholson, for an epplicetion form: Electron, 79/80 Bleckfriars Roed, London SE1 8HN. Tel: 261 9111.

G-PLAN

SYSTEMS ANALYST

c.£6,500

E. Gomme Limited, who manufacture G-Plan furniture, have e vecency for e Systems Anelyst in their IBM 370/125 installation.

Applicants should heve several years' dete processing experience, with at least 1 year spent in systems analysis, ideelly in e manufacturing environment.

The successful applicant will play en important part in the design end implementation of e wide variety of new applications, both batch end T.P., as well as being involved in the development of existing systems.

Conditions of service are very good. Relocation expenses will be reimbursed where appropriate.

Please write to: Mr A. Sempson, Company Personnel Manager, E. Gomme Limited, Spring Gardens, High Wycombe, Bucks.
Tel: High Wycombe (0494) 26260

HERTFORDSHIRE COUNTY COUNCIL

The opportunity has arisen for Data Processing professionals to join our computer team currently involved in an ambitious programme of systems design and development. Candidates should seek and enthusiasm, imagination, drive and ability to achieve objectives within prescribed time-scales.

The installation comprises a 1M byte NCR Criterion 8550 providing virtual storage under VRX operating system with interactive program development. Current developments include a major on-line stock control system and the introduction of mini-computers as part of a planned distributed processing network.

The posts to be filled are —

PROJECT LEADER

salary £7,164-£7,908 inclusive (ref: CP.4)

Applicants should have a sound knowledge of computer projects from feasibility study to implementations and at least one year's experience of leading a team of developmental staff is required. Experience in project control and evidence of the successful implementation of at least one major project is essential for this key post.

SENIOR SYSTEMS ANALYST

salary £6,633-£7,350 inclusive (ref: CP.5)

Applicants should have at least three years' systems experience, preferably on commercial applications. A programming background would be considered to be advantageous.

CHIEF OPERATOR

salary £5,847-£6,180 inclusive (ref: CP.6)

In addition to the responsibility for the co-ordination of administration of the two shifts of operations staff, the duties include a rapidly developing technical support function for the operations area. Applicants for this post should preferably have extensive operations experience of NCR main-frame computers and a general knowledge of telecommunications equipment, mini-computers and operations support activities. A flexible approach and an ability to learn new techniques are considered to be essential for this post.

Generous holidays, a contributory pension scheme with a wide range of benefits. Ideal working conditions, new offices, staff restaurant, in an attractive rural setting overlooking the County Town of Hertford, a range of sporting activities within easy reach of London's many amenities.

Removal, disturbance and lodging allowances are payable for approved circumstances and assistance with housing may be given.

Applications (no forms) giving details of age, qualifications, experience, age, qualifications etc. to The County Treasurer, County Hall, Hertford quoting appropriate reference, by 11th day, 11 June.

VERNONS ORGANISATION

have vacancies for

PROGRAMMERS - MINI COMPUTER

To join the team involved in the application of software in the Electronic Data Processing Department in our Aintree Branch.

Applicants should have:—

- ★ MINI COMPUTER EXPERIENCE including assembler Programming Language.
- ★ A sound understanding of computer hardware.
- ★ Peripheral driver, writing experience.
- ★ A good ENGINEERING/SCIENTIFIC BACKGROUND
- ★ The ability to function efficiently under pressure with minimum supervision.

We are offering an attractive starting salary together with contributory pension, life assurance scheme, free BUPA and four weeks holiday after a year's service.

Apply in writing to the:—

Personnel Manager,
Vernons Organisation Limited,
Ormeskirk Road,
Aintree,
Liverpool L69 1AA.

When we call someone a manager it isn't just a title. We mean it.

Data Logic's Professional Services Division is one of the country's leading software groups. We advise on feasibility, develop software and supply total systems. We cover the range from mainframes to the smallest computers. Several of our projects involve dispersed networks of ten or more minicomputers. Our largest has twenty-three machines and nearly three hundred displays.

Our line managers are responsible, within their defined areas, for sales, for projects and for staff. When we say they are responsible, we mean it. There are sales and profits targets, software quality standards to be met, and project deadlines. There are clients who look to the manager and his teams as experts — often the experts — in their fields. And our managers have considerable autonomy in planning and implementing the future development of their departments.

We want to meet men and women with the experience and ambition to join our successful management team. We know that there aren't many of you. You will have sales or management experience in a software or systems company. You will be technically on top of, and thoroughly up to date in, your field. You will have the confidence that you are ready to take on the demanding role we describe.

We are especially interested in knowledge of applications in banking, finance, commerce, industry and the public sector. There are opportunities in both the London area and the North of England.

Rewards will be high, with salary well into five figures, a company car and other benefits. As to the future, we plan to more than double turnover in the next five years. So the prospects for our managers will be outstanding . . . perhaps even unrivalled by any other UK systems company.

Data Logic

Interested? Then write or call quoting reference PS/04; Kathy Martin, Data Logic Limited, 29 Marylebone Road, London NW1, 01-486 7288

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TRAINING IN

EUROPE AND U.S.A.

SALES EXECUTIVES **£12,000**
Generous Basic Salary + 60% Quota Earnings Guarantee + Commission + Prestige Car + Extensive Training (U.K., U.S.A., Europe)

SYSTEMS SUPPORT EXECUTIVES **£7,000-£8,000 +**
Prestige Car + Expenses + Bonus + Extensive Training (U.K., U.S.A., Europe)

Our client is one of the most respected Computer manufacturers in the World with over 20,000 installations and Group Sales Exceeding $1 Billion. They offer an Extensive Range of High Performance Systems including:

Small Business Systems
Real Time Minis
Distributed Processing Networks
Terminals etc.

Supported from **9 Seperate locations**
with ..... **2 Customer Training Centres**
and ..... **Further locations currently being planned**

Currently all their Salesforce is Exceeding Objectives and to maintain their growth rate in the U.K. they need to make further investment in PEOPLE . . . YOU! 1979 Development will take place throughout the U.K. from bases in **London, Birmingham, Manchester, Leeds, Edinburgh and Dublin.** (Some of these being future plans.)

In addition to all the above benefits you will enjoy:
Profit Sharing Scheme
Subsidised B.U.P.A.
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PLUS:—One of the Finest Sales/Product Training Schemes Available in the Industry Today!

So, if you have, or are looking for, Sales or Support experience and feel you are ready for the challenge of a **Stimulating Dynamic Environment** with REAL PROSPECTS for FUTURE MANAGEMENT then Call Now for Immediate Interview.
Ref. C.S. 1149.

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59 EDEN STREET, KINGSTON UPON THAMES, SURREY KT1 1BW
TELEPHONE: 01-549 6441-9

INTERNATIONAL AMERICAN BANK

COMPUTER AUDIT

We are e major Americen Bank, long esteblished in London. Presently we ere expending our ectivities considerebly Worldwide and particulsrly in Europe.

Lerge deta processing projects ere currently being developed end more ere plenned in London, Europe and the Far Eest. The equipment is meinly IBM 370 end IBM System 3/32/34.

As e result of thie expension, the Internationel Audit Department wish to recruit a young men or women, to join the Computer Audit teem. The position will suit a self-motiveted programmer, in their mid-twenties with etleast 2 yeers' experience of COBOL Programming under DOS/VS (preferably in a benking environment), who wishes to develop their cereer by moving into the fest expending field of Computer Auditing.

The post effords the opportunity of working with various Computer Systems, both in London end Oversees, and offers excellent training to keep the candidefe et the forefront of Computer technology.

Generoue fringe benefits include:

- ★ Low interest mortgage end personal loen facilities
- ★ Free lunches, BUPA contribution and life assurance
- ★ Interest-free seeson ticket loen
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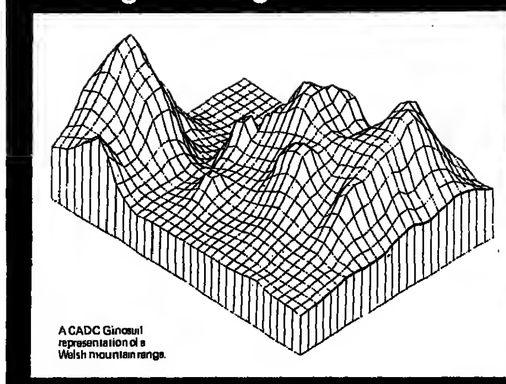
For further information please write or telephone Richard Newcomber, Manufacturers Hanover Trust Company, International Audit, 21-3 Cursitor Street, London, EC4P 4BB. Telephone: 01-405 1955.

In Engineering the future belongs to Computer Aided Design



A CADC Ginosul representation of a Welsh mountain range.

A CADC quality colour shaded Ginoscale image visualising an impeller for a gas-turbine.

Software Sales Consultant to take Gino into the 1980's

c.£8000. Cambridge based

Graphics, Engineering Databases, Language Processing

Industry's interest in the application of computers to design and menufacture is growing. It is the task of the Computer Aided Design Centre to help our customers make better use of their resources.

It is no exaggeration to say that a revolution is taking place in this field – and you could help to shape it.

The Centre is staffed by some of Britain's leading practitioners in the development of advanced engineering software. To match this we have created a Sales Consultancy group and now wish to appoint a Software Sales Consultant to cover established graphics packages based on our successful GINO family, together with engineering database and language processing software.

Your understanding of highly interective computing processes will be complemented with 2-3 years' selling plus ideally contract negotiation experience – perhaps with a manufacturer of graphical equipment or a specialist software house.

You will work with our Profit Centre Managers and support staff, but will spend much of your time away from the Centre, primarily in the UK and Europe, and will control and monitor egents worldwide.

The ability to write and present clearly argued proposals, often to very senior customer menagement, is naturally essential.

The Centre, in pleasant rural surroundings on the outskirts of Cambridge, combines all the advantages of a small organisation with the benefits of a large company. Our competitive salary and benefits package includes participating in our 1979 Productivity Bonus Scheme and assistance with relocation where appropriate.
Talk it over with our Marketing Manager, Norman Sandland, on Cambridge (0223) 63125, or write with career details, quoting reference CW1386, to Richard O'Shea, Computer Aided Design Centre, Madingley Road, Cambridge CB3 0HB.

Computer Aided Design Centre

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EDUCATION SPECIALIST

Tandem Computers Limited, manufacturers of the Tandem/16 Non Stop Computing System offering job opportunities in education and training at various levels in its rapidly expanding UK organisation.

We are specialist in providing on-line computer systems for the education industry and are looking for graduates and experienced people to join our Education Specialist team.

Successful applicants will attend a comprehensive training course at our headquarters in Cupertino, California to learn about our products and their application techniques. The appointments will involve extensive travel in Europe and the USA and will be rewarded with a competitive salary plus car and all expenses including the education of dependants, relocation and foreign allowances.

Salary will be in the range £12,000 plus. (OTE) Applicants must be graduates with some experience in computer systems.

Apply to:
R.A. Perrin
Tandem Computers Limited,
197 High Street,
Uxbridge, Middlesex.
Telephone: 0895 57001

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OXFORD UNIVERSITY COMPUTING SERVICE

The University has ICL 2980 and 1906A mainframe computers with a number of peripherals front end processors to provide batch, MAC and RJE facilities. The following vacancies exist:

SHIFT SUPERVISOR

to join the existing two supervisors in ensuring the smooth operation of the services.

TRAINING SUPERVISOR

This new post has been created primarily to ensure the adequate training of new operators. The person appointed will be expected to have several years experience in operations, with preferably at least one year of experience with VME/B or two years with GEORGE 3. Preferred age range 28-35.

Both posts are on a scale from £3,720-£5,205 per annum (under review), with a shift allowance of £622 p.a. for the Shift Supervisor post.

Further details and application forms, which should be returned by 20 June 1979, may be obtained from:

The Administrator
Oxford University Computing Service
13 Banbury Road
Oxford OX2 6NN. Tel: 0865 56721

Interviews will be held in the week beginning 2 July 1979.

Libya

Senior Systems Analyst

This position requires a BSc, preferably in computer science or other numerate discipline, in applied or theoretical areas. Background must include minimum of 6 years combined experience as a Systems Analyst and Programmer, preferably on an IBM 370 installation using ANS Cobol and OS/VS1.

Responsibilities include assisting user managers and supervisors in determining information requirements for directing the design, justification and implamentation of computer based systems and for on-the-job training of national programmers and systems analysts.

An attractive salary plus overseas allowances. One month's annual leave with return fares paid to the UK. Furnished family accommodation provided by the company. Position is located in Tripoli.

Please write, with full personal and career details, to:
Miss J. M. Lamont,
Overseas Recruitment,
Mobil Services Company Limited,
Mobil House,
54/60 Victoria Street,
London SW1E 6QS.

Mobil

PROGRAMMERS

Henley-on-Thames c. £6,000

Spring Grove Services, a leading company in the garment rental business, requires Programmers to work on new developments in the company's operations.

Our present systems run under GEORGE 2 on an OCL 1903T, with a subsidiary company in Holland using an IBM System 32. The market is changing rapidly and our systems must change to remain competitive. To this end we are investigating the use of micro-computers and micro-elect. and the technique of distributed processing.

We need Programmers who can come up with good ideas as well as good software. Two years' COBOL experience is essential and a knowledge of RPG 2, ICL 1900 or IBM System 32 machines would be an advantage. The successful applicants will join small highly skilled teams based in Henley. There will be opportunities to travel to our processing plants throughout the U.K. There are attractive company benefits including free insurance and a non-contributory pension scheme.

For further details and application form contact:

Wendy Howley
Spring Grove Services Ltd.,
Reading Road,
Henley-on-Thames,
Oxon. RG9 1EP.
Tel. Henley 3091

Spring Grove

PROGRAMMER to £5000
COBOL, ICL Gill. Good experience. Beds. Ref. B/010A.

SYSTEMS ANALYST £7000
Commercial systems, good experience, IBM/ICL, Luton. Ref. B/1033

PROGRAMMER to £6000
Algol 60 or Fortran, graphics, civil engineering, Bedford Ref. B/0100.

JUNIOR PROGRAMMER to £3800
Some experience, re-training for Assembler, Herts. Ref. B/016.

PRINCIPAL ANALYST £7000
Responsible for 5 staff, background ICL 1900/COBOL, Bedford. Ref. B/010/073.

PROGRAMMER to £5800
Assembler, some analysis opportunity, Bucks. Ref. B/028.

PROGRAMMER £4500
COBOL, ICL, 1 year + experience, Milton Keynes. Ref. B/039.

PROGRAMMER £5500 +
RPGII, 8/18 months exp., excellent banking benefits, Ldn. EC3. Ref. B/074.

PROGRAMMER c.£6000
Fortran expert, travel to Europe (anywhere), Luton base. Ref. B/060.

PROGRAMMER c. £12,000
OCS, ASSEMBLER, 2 years' +, Kuwait. Ref. B/061.

Telephone or write to:
X-CALIBUR
Duke House, 3 Duke Street, Bedford
0234-48577
Computing Services Association Agency Licence SE(A) 3345

X·Calibur
CONTRACT SERVICES

Communications Specialist

£8500 including bonus

This is an opportunity for an experienced communications hardware engineer who seeks a challenging and creative project role with a prestigious employer.

As part of its heavy commitment to computerisation, The Stock Exchange is developing an in-house information and communications system for the securities industry which is currently the largest private application of viewdata technology.

We are looking for a person, preferably formally qualified, with extensive practical experience of data communications networks — gained either from planning and commissioning new systems, or by responsibility for their maintenance and support — to be directly accountable to the Project Manager for the hardware side of the project. There are two supporting engineers and full development workshop facilities.

The appointment is initially for two years, with a generous terminal bonus. The employment package includes five weeks' holiday, free BUPA insurance, subsidised lunches and assistance with relocation expenses if appropriate.

Please write with full details about yourself, or telephone for an application form, to: Phil Mountford, The Stock Exchange, London EC2N 1HP. (Telephone 01-588 2355, ext. 8086).

The Stock Exchange

OCC

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

sems

THOMSON-CSF

Our clients "Societé Européene de Mini-Informatique et de Systèmes" is expanding its operation to tha UK market. A member of THOMSON-CSF, one of the world's leaders in electronics, SEMS is currently marketing worldwide a range of MINI Computers including the SOLAR and the MITRA sariea, offering a wide-ranging involvement in the industrial, scientific and also business systems markets.

SALES EXECUTIVE
(Manager Designate)
c. £15,000 + Car.

The first key position of a new sales force is to be offered to a Sales Executive who will assume immediate responsibility for the UK market. This candidate could become the future Maneger of a growing UK network.

This position calls for a strong track record in computer sales, preferably in an environment similar to SEMS established market i.e. Industrial and scientific mini computer systems. A second line of activity will be entering the interactive market with SEMS recently introduced SIS systems. Experience in that field would therefore be of additional interest.

The ideal candidate could be one of the following:

- An established Sales Executive with impeccable seles record, who will want to continue working in a similar role assuming a star position in en expanding sales force.
- Someone who can offer the same sort of experience but has the ambition and the potential to move into Sales Management.
- A Sales Manager who can offer experience in Sales Management as well as a competent seles record and is prepared to work initially as e Sales Executive.

Product training on SEMS products will be given. The company will be besed in Feltham. Full conditions of employment will be offered including some relocation expenses if applicable. The package negotiated for the first year will be on a full salary basis incorporating the amount of commission a top Sales Executive would expect to earn. ***Ref: 510/CW/Renée Nute.***

Clients interviews will start in London w.e.f. Saturday 9th June. Final interviews will take place soon after in Paris.

Please ring Renée Nute on 01-242 9356 or write to the address quoted. If it would be more convenient to telephone in the evening or during the weekend please ring 01-874 6372.

OCC Computer Personnal Limited, 16 Bedford Row, London WC1R 4EB

Member Computing Services Association

McDowell, Knaggs

The Company
McDowell, Knaggs has been operating in the fields of Systems/Programming, Personnel and Training for a relatively short period but has quickly established itself with a reputation for a reliable first class service. Because of this, the Company is achieving vacancies

The Job
PROGRAMMER/ANALYST
Salary Package to £6,000 + car depending on experience
The successful applicant will be expected to work from a WORCESTER base travelling to Customer Sites in WORCESTERSHIRE, GLOUCESTERSHIRE, AND THE W. MIDLANDS. They will be involved in the design, specification, programming, testing and implementation of a wide variety of communications based commercial systems.

PROGRAMMER
Salary up to £5,500 + car allowance
This position will involve the programming, test and implementation of similar systems to the above but will require less career path where a customer and systems environment will increase.
The Company is currently negotiating for six own in-house Micros and both jobs will involve the use of Micros as well as mainframes.

Qualifications
Candidates should be able to work in a small closely knit team and have suitable experience to work on predominantly ICL mainframes, but not necessarily essential as the right attitude is as important a qualification as technical knowledge

Applications should be made directly to
DON KNAGGS on Worcs 427077
(Bewdley 400036 evg. and w/e.)

UNIVERSITY OF BRADFORD
Computing Laboratory
Computer Officer Posts

Applications are invited from graduates or professionally qualified persons for two posts in the University's Computing Laboratory which operates a large ICL 1904S installation running under the George 3 Operating System and providing a central service for research and teaching within the University.

COMPUTER OFFICERS
(Ref. CL/CO/CW)

Are required in the Systems/Communications and Application groups. Both posts require programming experience and knowledge of the GEORGE 3 Operating System, would be an advantage. Salary on scale £4232 to £7148 p.a.

Application forms and further particulars are available from the Personnel Office, University of Bradford, West Yorkshire BD7 1DP, to whom they should be returned by 15th June 1979.

The above vacancy is open to both male and female candidates.

Reed Executive
The Country's most successful Recruitment Service

Analyst/Programmer

South Midlands to £6,000

Why not live in the Cotswolds, enjoy first-class working conditions and gain invaluable experience on one of the most advanced on-line real time systems in the country? As a member of a group central management services team you will be responsible for the support and future development of one or more operating site installations. The requirements are basically a sound knowledge of COBOL, some exposure to data communications and ideally manufacturing experience. Promotional prospects are good with opportunities throughout this major international group. There is a good range of benefits and an excellent relocation package.

Telephone 021-643 7226 (24 hr. service) quoting Ref. 1110/CW. Reed Executive Selection Limited, 6th Floor, The Lynda, Birmingham 2 4PB.

STOP PRESS

Programmer/Analysts

ANALYST PROGRAMMER

C £6,500 **S.E.1**

Feel like travelling worldwide? A major business forms manufacturer with international associate companies requires an alert RPGII programmer to help install exciting new systems on an IBM System 34 computer. Applications you will work on include sales and marketing, stock control, order processing, fixed assets and financial systems. Candidates should have at least 2 years' + computing experience and be prepared to travel. There could also eventually be the chance to learn the latest RPGIII language. Large company benefits apply and there are excellent prospects for promotion.
CW 22/9 MICHAEL

CONSULTANTS

C £7,000+PROFIT SHARING+CAR **C. LONDON**

A small but active software house based in SW London needs 3 systems analysts for the following major applications. The first analyst needs to have ICL 2903/4 or 1900 GII experience of 4 years or more, to work on a major financial application. The second needs to know the 2960 machine as this involves an interesting MIS conversion and upgrade from an existing ICL 1900. The third consultant should have stock or production control experience for an ICL 2900 under VME8, using TP and IDMS. All three vacancies offer attractive working conditions including 4 weeks' hols. and 9 months' sick pay.
CW 22/2 MICHAEL

PROGRAMMER ANALYST

C £5,000 **CROYDON**

Our clients are an international foreign insurance company with the majority of their systems being financially oriented. IBM COBOL people should apply and especially those who would like the opportunity to learn MK IV. Although the installation is not large the work is very varied and interesting, and demands a high degree of professionalism. Excellent shopping area nearby and the usual large company perks.
CW 22/3 MICHAEL

ANALYST PROGRAMMER

TO £9,500 **S.E.1**

Being a specialist Service Bureau our client's future is assured, so why not join them and make sure your future is as safe? They specialise in legal work and provide on line and batch facilities from their up-to-date OEC installation. If you have 2 years' BASIC+ experience and enjoy working for a progressive organisation then apply now. Company benefits include C.P.S., Life Assurance and 4 weeks' hols.
CW 22/4 MICHAEL

CUSTOMER SYSTEMS SUPPORT

C 8,500 + CAR **C. LONDON**

This major international terminal and mini manufacturer requires three first-rate Systems Analysts to advise, design and install a variety of Real Time applications based around Mini or O.E.M. Mainframe Computers. Excellent opportunity for advancement and top company perks.
CW 22/5 MICHAEL

SYSTEM 10 PROGRAMMERS

£4,800 to £8,300 + O/T **SLOUGH**

Do you have System 10 experience and wish to use it, but also wish to broaden your knowledge to include IBM equipment? If so then apply to join our client's company, an important distributor of industrial appliances. They have a major IBM DOS/VS installation plus a connected network of System 10s around the country for on-line distributed processing work. Excellent company perks include paid overtime, relocation expenses, flexitime, non-C.F.S., subsidised canteen and 4 weeks' hols. You really can't afford to miss this golden opportunity.
CW 22/6 MICHAEL

ANALYST PROGRAMMERS

£4,500 to £8,000

NR. HEATHROW AIRPORT

Are you a COBOL or PLI programmer with about 2 years' experience, anxious to get into analysis work but frustrated? Apply to this major consumer product company and they will train you accordingly and make your career really worthwhile. They have an IBM DOS/VS installation using on line CICS systems and work will be on a number of sophisticated commercial systems. Top company perks include 4 weeks' hols., subsidised canteen, annual bonus scheme and a free local bus service.
CW 22/7 MICHAEL

PROJECT LEADER

TO £6,500 **NR. SEOFORD**

With a lovely area to live in, pay and working conditions at the top end of the bracket, the surely must be the right move for you. You just need 5 years or more OP experience as an analyst or programmer based around IBM equipment (using COBOL or PLI) with a preferred O&M background. You should also have the ability to lead a small team working on advanced IBM OS/VS1 CICS systems. Top perks include relocation expenses, flexitime, C.P.S., subsidised canteen and 4 weeks' hols. Project leader types please apply now.
CW 22/8 MICHAEL

JUNIOR ANALYSTS/ COMPUTER STAFF

£5,500 to £12,000 **CENTRAL LONDON**

Six large, well-established consultancies wish to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required whose in-depth implementation experience of IBM or OEC latest ranges are essential. Excellent fringe benefits and prospects.
CW22/1 MICHAEL

ANALYST PROGRAMMER

C £6,000 **ESSEX**

A major industrial office product organisation is Looking for programmers who wish to progress into analysis, or analyst programmers with 1½ years' + IBM COBOL experience. This company has exciting application areas to work on, including a major sales accounting and order processing system where teleprocessing and Database techniques will be used on their IBM DOS/VS installation, which includes 70 VDUs. Excellent training, nice new building and company benefits will be provided. Please apply quickly.
CW 22/10 MICHAEL

FREELANCE PROGRAMMING VACANCIES

UK to £360 per week

ICL	To 2900 Conversion	Brighton	2 months
IBM	Valuation S/A	S. Coast	6 months
IBM	PL/1 CICS	S. Coast	6 months
IBM	Mark IV	C. London	9 months+
D.G.	Nova Assembler	Herts	3 months

Overseas to £490 per week

IBM	Cobol OS	N. America	6 months+
IBM	MVS Syst. Prog.	Germany	6 months+
DEC	Macro 11/RSX11	Paris	1 year
SINGER	Syst. 10 Assembler	Brussels	6 months
IBM	Cobol/Assembler	Kuwait	1 year+

Ring Irene on 01-995 4148 for more vacancies

UCA Recruitment Consultants
UNIVERSAL COMPUTER ASSOCIATES LIMITED
01-995 3883 (01-958 6138 Evenings)
Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4.

We have moved to VICTORIA

Central Computing Consultants

8 Lower Grosvenor Place, London SW1 Telex 27950 Ref. 1035

Telephone 01-834 7105

MICRO PROCESSING

Germany Up to £17,500 + benefits

Opportunities have arisen with our client to combine a move to Germany and work on a micro-processing development.

Candidates with experiences of INTEL 8080 or similar will enjoy a rewarding career developing micro systems for test and installation equipment. Experience of PLM would be advantageous.

Successful candidates must have the ability to speak standard German. Our client offers generous salaries plus many fringe benefits.

CW 22/1

PRODUCT SPECIALISTS

Middlesex Up to £7,500 + car

One of the most dynamic companies marketing computer equipment today, is recruiting two additional support consultants to introduce new product lines. These products are centred around word processing and portable DATA ENTRY equipment.

Candidates should have an academic qualification in a computer-related subject. Suitable backgrounds will include experience in both hardware and software in a support, service or design environment.

These positions include pre- and post-sales support for these new product lines and include the evaluation and introduction of the products to the worldwide network of distributors.

The Company offer one of the most rewarding career opportunities within a dedicated and committed marketing and support operation in the UK and Europe.

CW 22/2

MAINFRAME COBOL

London £7,000 + bonus

Experience of COBOL is the more immediate requirement needed by our client, an international software house, today.

Fortunately, our client being one of the oldest and most respected companies in the industry can and do offer a lot more than the majority of their competitors. These benefits range from genuine career progression to Project responsibility. Salaries + Bonuses are related to one's contribution to the company, and there is the prospect of interesting assignments in the U.K. and overseas.

As mentioned above, we seek candidates with COBOL experience, but due to the overall business base being spread over all the traditional mainframes our client can and will offer interesting and well paid (up to £7,000 + bonus p.a.) job opportunities to programmers with 2 years or more COBOL on any machine.

CW 22/3

HONEYWELL

N.W.3 c £6,000

Our clients, a National Transport organisation who have their Head Office in Swiss Cottage, have a vacancy for a JUNIOR ANALYST or PROGRAMMER who would like to move over to Analysis.

Their installation is a Honeywell 66/40 running under GCOS and using TDS/IDS. The successful candidate will initially train and gain experience by working with a Contract Analyst, but you will eventually be providing the base of future analytical requirements. It is envisaged that the person selected will eventually become the Senior Analyst.

Ideally, the person we are looking for will be of Degree standard, would either have had programming experience (Cobol on Honeywell Hardware) and some analysis, or a Programmer/Analyst who wishes to become a full-time Analyst.

CW 22/4

OPPORTUNITIES IN EUROPE

ATTRACTIVE SALARIES

1. TECHNICAL WRITERS	SWITZERLAND
2. CAD/CAM — MECHANICAL ENG	HOLLAND
3. IBM SYSTEMS PROG	FRANCE
4. INTEL 8080/8085	GERMANY
5. PROCESS CONTROL Software	SWITZERLAND
6. SIEMENS 330 Software	GERMANY
7. DL1/CICS	HOLLAND
8. RTL 2 PROCESS CONTROL	GERMANY

Candidates interested in a move to the Continent with the above or similar experience, should contact us to discuss these opportunities.
CW 22/5

SYSTEMS AND PROGRAMMING

London Up to £8,500 p.a.

A major international service company based in LONDON has a need for experienced PROGRAMMING AND SYSTEM staff to assist them with their planned expansion:—

The installation is an IBM 370/158 running under MVS, and using CICS and IDMS.

Their main requirements are for SYSTEMS ANALYSTS with at least 2 years' Systems Design experience in any of the following areas:—

TELEPROCESSING, REAL-TIME SYSTEMS, DATABASE

They also have vacancies for PROGRAMMERS at all levels, the minimum requirement being two years' experience of programming in PL1 and/or Assembler on IBM equipment, within a project team environment.

In addition to earning attractive salaries, the successful applicants will be offered all the benefits usually associated with a large company.

CW 22/8

SOUTH COAST OF IRELAND

Senior Programmer £ neg.

A manufacturing company in the south of Ireland wishes to recruit a senior programmer to join its development team. The position involves supervision of a group of programmers and the development of manufacturing and commercial systems.

Candidates should have several years' DP experience and a knowledge of IBM equipment is desirable.

The position carries a competitive salary, which will not prove a limiting factor to the right applicant, and the benefits are those normally associated with a large company.

For further information telephone Jim Corrigan on Dublin (0001) 789577 or write to CCC at Cranmore, 66 Glen Road, Belfast BT11 8BD.

CW 22/7

MOVE INTO MICROS

Berkshire

A small systems company based in Bracknell, is in the process of expanding its operation and consequently is able to offer unique opportunities to enter the microprocessing side of computing.

The company now requires graduates with a good all-round knowledge of programming and systems design, and experience of FORTRAN and/or an assembly-level language to assist them with their development of specialised systems for the graphic arts industry and the legal profession, which are based on Data General hardware. They would also like to hear from Engineering graduates who have experience in logic and systems design, with a knowledge of systems debugging using assembler.

Successful applicants will be offered an above average salary as well as the opportunity of working on stimulating projects for a dynamic young company, where results are well rewarded.

CW 22/9

ADVANCED TECHNOLOGY SOFTWARE DESIGN

☆DESIGNERS☆

SENIOR DESIGNERS ☆ PROJECT LEADERS

£6,500 P.A. TO £9,000 P.A.

One of the World leaders in the field of Telecommunications can offer experienced Software designers the opportunity of joining teams working on the most advanced Telecommunications system in the Industry. At Project Leader level candidates will be able to make an immediate contribution based on 4-5 years' solid experience in Control Software and preferably a knowledge of Telecommunications systems. There are, however, opportunities at all levels and if you have any experience of real-time Software Design or High Level languages we strongly recommend that you contact us to discuss these openings.

The teams will be based WEST of LONDON in RURAL BERKSHIRE. The working environment at the Self-contained Research and Development centre is exceptionally good, and there is a very generous RELOCATION PACKAGE available to all candidates together with the usual large company benefits.

CURRENT PROJECTS

- ★ OPERATING SYSTEMS
- ★ COMPILERS
- ★ SIMULATION
- ★ TELECOMMUNICATIONS SOFTWARE

CORAL is the main software tool but FORTRAN, ALGOL or ASSEMBLER experience is useful.

CAREER PACKAGE

★ **REMUNERATION** — These salary levels are realistic and negotiable on experience and potential.

★ **PROSPECTS** — The pace of development is such that having proved your ability, the positions of responsibility will find YOU.

★ **EXPERIENCE** — Quite simply, involvement in this nationwide project will put you at the head of your field.

★ **TRAINING** — In depth, on and off the job.

Contact: ROLAND JONES
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Or write to Information Processing People
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RAND INFORMATION SYSTEMS LTD.

Our clients offer data processing services to clients throughout the world. Their corporate offices are in San Francisco with established companies in the UK, France, Israel and Australia. For over 10 years they have consolidated their reputation as specialists in conversion systems; they are also entering other areas in the computer market and wish to recruit a number of computer professionals to meet their expansion plans.

Cobol Programmers
£4,500–£7,000

Technical Consultants
£7,000–£9,000

We are looking for high calibre Programmers and Technical Consultants with a minimum of two years solid COBOL programming experience on Honeywell, IBM and/or UNIVAC systems.

More experienced candidates should offer a sound working knowledge of OPERATING SYSTEMS (GCOS for HONEYWELL), TRANSACTION PROCESSING, DATABASE (especially for Univac 1100), or a specialist knowledge of IBM.

All positions are permanently based in the UK with overseas assignments offering an opportunity to travel or to work abroad in the case of longer projects. Current projects are in progress in the UK and FRANCE with prospects in HOLLAND and GERMANY.

Competitive starting salaries will be negotiated within the range £4,500 - £9,000, taking into account qualifications and experience. The package will also offer generous fringe benefits. ***Ref: 514/CW/RN.***

(Et si en plus de cela, vous parlez français, et bien raison de plus pour ne pas hésiter !)

Please ring Renée Nute for further information - day 01-242 9356, evenings and weekends 01-874 6372.

Our offices will be open until 7.30 p.m. on the 4th and 5th June for informal discussions with our clients representatives and our consultants.

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB

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The London Life Association Ltd., in Surrey, can offer all this plus a challenging career within the Computer Operations Support Section.
We are currently operating an ICL 1902T (128K) machine and require an additional member to join the section.
All applicants must have sound experience of ICL 1900 series hardware, together with an in-depth knowledge of George 3 or 2s
Some experience of implementing Data Capture would also be required.
All salaries are genuinely negotiable according to experience and qualifications.
Please write or telephone:

The Personnel Department
The London Life Association Limited
2 Carshalton Road, Sutton, Surrey
Telephone: 01-643 8010

PROGRAMMERS
HAMMERSMITH AND NOTTING HILL GATE

A major International Group of Civil Engineering Consultants and Architects have two vacancies for experienced Programmers, one in their Hammersmith office and one in their Notting Hill Gate office.

Duties will include assistance in running Prime 300 series computers, assistance to users and responsibility for maintenance of the computer hardware. The persons appointed will design, write, document and prepare Fortran programs for engineering problems: at Notting Hill Gate there will be added scientific and commercial programs

Candidates must have a degree in engineering, science or mathematics or a HND in computer studies. A thorough knowledge of Fortran is essential and applicants should have a minimum of two years' computing experience, ideally in an engineering or scientific environment, over and above the experience acquired at University or College.

The salary will be related to the qualifications and experience of the selected candidate. Additional benefits include non-contributory pension and group PPP schemes, Flexitime working: 20 days' annual holiday.

Please apply in writing, quoting ref: 1787 and enclosing a brief but comprehensive c.v. to:

N. W. RAMSAY
Director of Personnel
SIR WILLIAM HALCROW AND PARTNERS
Newcombe House
45 Notting Hill Gate, London W11 3JX

THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT — THE QUEEN'S AWARD FOR TECHNOLOGICAL ACHIEVEMENT

SOFTWARE ENGINEERS

Do you have two to three years' experience programming microprocessors or minicomputers at assembly level? If so there is an opening for you in our active, expanding Research and Development Department

We currently have vacancies for two Software Engineers to work on microprocessor-based designs and take responsibility for their software development

The Department is active in a variety of fields including Research, Electronics, Computing and Precision Engineering giving the successful applicants the opportunity to display their skills solving a wide variety of problems.

Applicants should hold a suitable degree or other equivalent qualification, and have worked with at least two of the following systems. PDP11/LSI11, RT11, RSX11, IAS, M6800, Z80, 8080. An understanding of computer hardware would be a distinct advantage.

The Department is currently based in London, EC1, but will be able to offer the opportunity to work in the west of London in the near future. An excellent benefits package is offered, including a non-contributory pension scheme, free life assurance, free staff restaurant, and relocation assistance.

The appointments would be financially attractive to those currently earning around £6.5k.

Please write to: M. H. Boorman, 2 Charterhouse Street, London, EC1, for an application form, giving a brief description of your career, and a telephone number where you can be contacted.

ANALYST PROGRAMMER

Swindon **£6,500 + benefits**

Are you ready to move into Systems Analysis?

Training provided with involvement from design through to implementation.

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You must have enthusiasm for computers and experience in selling to middle management

Your area will be Norfolk, Suffolk, Cambridge and Bedford.

In return you will receive a good salary, commission and bonuses, a company car and four weeks' holiday. Plus the benefits of a non-contributory pension scheme and free bedroom company flat with service agreement within your territory.

Apply in writing to:

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Managing Director
SCS BUSINESS SYSTEMS LTD.
889 Holdie, 77 Milton Road
Croydon, Surrey

UNIVERSITY OF MANCHESTER
LECTURERS IN COMPUTER SCIENCE

Applications are invited for the above posts from candidates possessing good Honours Degrees in Computer Science, or a related discipline, who have had research or industrial experience in, Systems Software, Information Processing, Applications or Industrial Applications. The successful candidates will be expected to undertake teaching at both undergraduate and postgraduate levels and to contribute to the Research of the Department into the design and performance of application orientated computer systems. Posts tenable from October 1st, 1979 or a date to be arranged. Initial salary within the range: £4,232-£5,048 p.a. or £4,333-£5,188 p.a. from October 1st, 1979. Superannuation.

Further particulars and application forms (returnable by June 29th) from the Registrar, The University, Manchester M13 9PL. Quote ref: 1177/79/CW.

I've a challenge you'll find hard to resist

I have been retained by a major computer company to interview Field Service Engineers who want to improve their career prospects.

For this reason I would especially like to talk to people who feel that their capabilities aren't being stretched to the full in their current job.

The company I represent is among the fastest growing computer companies with a multi-million pound investment in facilities, equipment and people throughout the world.

They have a wide range of interesting and advanced systems that are being used in business, science and industrial applications. Because of the company's continued growth in all these areas they need experienced Field Service Engineers for locations in the UK, particularly in the London area. Those who can prove themselves can expect promotion very quickly.

Don't worry if you feel your present experience is too limited. The company is making a major investment in a new training centre to be located in the UK. Here Field Engineers will be continually updated on their product range and Field Engineers joining this company will receive special training.

I can promise men or women a more interesting and worthwhile career plus an excellent salary package. All enquiries will be dealt with in the strictest confidence and your name will not be passed to our client without your permission.

Interviews will be held in London and you are asked to phone Mike Chapman at the address below.

GA

GROSVENOR ASSOCIATES
22 South Audley Street, London W1Y
Telephone: 01-493 0837
INTERNATIONAL RECRUITMENT CONSULTANTS

South-East Thames Regional Health Authority

REGIONAL COMPUTER CENTRE

Project Leader

SCALE 14 — (£5,891-£7,069)

We are looking for a systems analyst to take responsibility for the financial systems project team. This challenging post will provide experience in supplies, accounting and estate management systems run on an ICL 1904S. Regional implementation of the supplies system is planned and Radiofon equipment is to be used to link the supplies departments to the Regional Computer Centre.

We provide computer services for hospitals and Health Authorities in South East England. The Centre employs about 150 staff and the mainframe computer is an ICL 1904S with discs, tapes, printers, communications processor and MOP terminals. In addition, there are ICL 2904 computers dedicated to remote transaction processing sites at a Health District and an Area Health Authority, both linked to the mainframe.

We are also currently investigating the use of micro-processors for distributed processing applications within the Region.

The Centre is situated in the grounds of Lambeth Hospital, close to the Elephant and Castle. It is accessible by public transport and free car parking facilities are available.

For further information and an application form (returnable within two weeks of this advertisement appearing) telephone or write to: The Regional Computer Services Officer, South East Thames Regional Health Authority, Regional Computer Centre, Brook Drive, London SE11 4TH. Telephone: 01-735 0071, ext. 38.

PROGRAMMER FOR NIGERIA

A proven programmer, preferably with a banking background, is required for service in our associate company in Nigeria. Experience in ICL COBOL/PLAN and ICL 2900 Series Equipment essential.

Position in a small development team offers considerable challenge involving wide all round responsibilities. Plans include use of package developed in UK to transfer accounting to a 2904 machine.

Emoluments in Nigeria will be not less than N16500 per annum (approx £13,000 per annum at current rate of exchange). Fringe benefits include free furnished quarters in Nigeria, non-contributory pension scheme (subject to satisfactory medical), local Nigeria medical scheme etc. The assignment will be for up to 2 years initially during which period there will be generous home leave with passages paid. Thereafter, term may be extended by mutual agreement, or successful applicant will be offered a position within our Computer Services Department in Poole or elsewhere overseas.

If interested, please write giving full details of career to date to:

Colin Maloney, Head of Development,
Management Services Division,
Barclays Bank International Limited,
1 Wimborne Road, Poole, Dorset BH15 2BB.

BARCLAYS International

ICI Central Toxicology Laboratory

This laboratory provides advisory and experimental services to ICI Limited, for the control of toxic hazards in manufacturing processes and in other fields of growing importance, such as the development of pesticides and food additives. Emphasis is placed on improving and assessing methods for studying the biological effect of foreign compounds and upon understanding mechanisms of toxicity. The provision of toxicological information, prior to product clearance and registration in many countries, is a major activity undertaken by the Laboratory on behalf of the ICI Group.

Operations Controller Computer Services Group

The Central Toxicology Laboratory is introducing a data handling scheme to store and analyse the data generated by the toxicity tests it carries out for Divisions. The Job Holder will be responsible for the correct, secure operation of the system which is based on a Data General M600 mini-computer. This will include the supervision of other operating staff. He/she will also be involved in the development of the operations environment of the new system and in the use of computer hardware throughout the Laboratory.

Candidates should have an engineering (or computer science or similar) degree (or equivalent), and/or previous working experience in a mini-computer environment with on-line systems. Supervisory and administrative experience and the ability to take decisions on system operating parameters quickly and clearly would be desirable.

You would be working two miles south of the village of Alderley Edge on the main road (A34) between Manchester and the Potteries on a 300 acre site which the Laboratory shares with ICI's Pharmaceuticals Division. Alderley Edge is less than 20 miles from Manchester and in addition to the well-wooded Cheshire countryside which surrounds it, Alderley is within easy reach of the Derbyshire Peak District, the Lake District and the North Wales Coast. Staff working at Alderley live over a wide area but mainly in the Macclesfield and Alderley Edge/Wilmslow area.

The salary for this vacancy is around £4400 plus a productivity bonus and there is a Profit Sharing Scheme. A contributory Pension Scheme is in operation and after joining, staff receive a reasonable refund of removal expenses.

ICI

Applicants, male and female, should telephone or write for an Application form to: Mr. Andrew Blain, Assistant Personnel Officer, Central Toxicology Laboratory, Imperial Chemical Industries Limited, Alderley Park, Nr. Macclesfield, Cheshire SK10 4TJ. Telephone: Alderley Edge (0625) 582711. Please quote Ref. No. OC/SS/JM. Closing date for applications: June 30th. Overseas candidates should only apply if they have a planned visit to the UK within the next two months.

SYSTEMS DESIGNERS LIMITED

Quality first

We are confident of a successful and exciting future. ARE YOU?

Systems Designers Limited needs computer professionals at all levels to work in very nearly every field of computer operation, not only in the UK but also in Europe, the Middle East and the USA. Although a large amount of work is centred around our Camberley, Frimley and Manchester offices there are many long term projects which offer opportunities to see other countries throughout the world.
Our continuing requirement is for staff at all levels. We are looking for final year graduates as well as experienced software and systems professionals.

Salaries are negotiable up to £12,000 p.a. according to ability and experience.

Systems Designers controls and encourages the career progression of its staff giving them a wide variety of experience of both project applications and computer systems.
The company runs productivity bonus, insurance and pension schemes and offers assistance with relocation.

**Telephone Ann Gregory for an application form and further information about the company or write to:
Bill Hockey, Operations Director, Systems Designers Limited
1 Pembroke Broadway, Camberley, Surrey GU15 3XH
Telephone Camberley (0276) 62244**

Systems Designers Limited has an unrivalled reputation in modern computer technology as applied to mini and micro computers in real-time environments. This reputation is resulting in a company-wide expansion plan, which offers plenty of opportunity to the right people. **We are British, independent, currently 200 strong and confident of a successful, exciting future.**

Our principal work areas are currently:

COMMUNICATIONS: Message switching, telex systems, Communications management systems, computer communications.

INDUSTRIAL: Process control and monitoring, plant control simulation, high speed data analysis, distributed microprocessor system.

MILITARY: Modelling, avionics and radar systems, complex rigs, simulators, microprocessor missile systems.

SOFTWARE PRODUCTS: Compiler technology, software design techniques, MASCOT, information processing systems, STATUS and VIEWDATA systems.

CONSULTANCY: Complex military systems, software and systems development technology.

Project Leader

Salary up to £6702

To lead teams of programmers/systems analysts on full range of Council's computer activities. Candidates must be experienced COBOL programmers with up to two years' systems analyst experience. Job description available.

Systems Analyst/Programmer

Salary up to £5568

To work in project team initially on police command and control systems using dual specialist equipment backed by main frame, developing and maintaining communication and general systems employing CORAL and COBOL. The post will allow contact with specialised techniques and the occupant will be able to widen experience to the limits of ability.

The Council's computer equipment consists of a Honeywell level 66/10 and level 6 processors

Application forms and further details for the above posts are available from the Personnel Officer at County Hall, Bedford. Telephone: 0234 63222 Ext. 107, to whom applications should be returned by: June 15th, 1979.

Bedfordshire COUNTY COUNCIL

ANALYSTS & PROGRAMMERS

The Southern branch of our parent company, GOULD COMPUTER SYSTEMS, currently need all grades of systems personnel, for work in the software house environment.

We have clients in all areas of the South of England, from Luton to Brighton and London to Bristol.

The sort of people we are looking for will be responsible professionals, who want to be a part of a small, rapidly-growing company, and able to contribute to its success.

Salary range £4500-£7000 + expenses, and car option after 2 years.

Or if you are a Freelance, with a professional attitude, or contemplating freelance work, give us a ring — it can only be to your advantage.

Whatever your skills —
IBM/DEC/Univac/ICL/Datapoint or Payroll/Accounting systems —

Ring Jack Paddison on Swindon (0793) 46701 or write with cv to —

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159 Victoria Rd. Swindon, Wilts.

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You probably started the hard way, at the bottom.
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Right now Comshare is moving faster than any other specialist services agency in Europe.

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We are not looking for a job hopper but someone with a full knowledge of computer basics. You will be working in a fast thinking environment and need a more that average understanding of operating skills.

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By now you'll realise we need someone a bit special who needs to realise his potential.

Your duties will be to augment Comshare's operators by being responsible for the vast array of non-standard mag tape operations, graph plotting, card and paper taper operations and if that doesn't keep you busy there will also be administrative duties to perform.

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The starting salary will be in the range of £4,250 to £4,500 per annum plus L.V.'s and B.U.P.A. But for the right person there will be the facility to progress without having to change jobs again.

Write to Vince Blackall at Comshare Limited, P.O. Box 197, London SW3 5RL. Or phone him on 01-351 4399.

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TECHNICAL SUPPORT PROFESSIONALS...

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Who gets all the credit in computers? Just about everyone but the boys (and girls) in the backroom. It's all too easy to ignore the technical support role, yet the major and rapid advances in computer technology now make it an integral, vital, and profit making part of the sales operation.

Our client – a major name in commercial computing and one of the most exciting companies in its field recognises the role of the Support Professional for the important contribution it makes to its business.

Their success is second to none and they have bold plans for the future. In the next few years they plan to develop their service, their creativity and their share of the market to become unassailable leaders in their field. Now they are looking for more of the talent that will take them there.

Their immediate need is for more support staff to join both new and existing teams providing support to the many services offered. For the more experienced applicant there are real management roles requiring confidence and initiative. All successful applicants can expect a challenging and changing environment.

Your career will be developed with both formal and informal training and by interchange within the department. In addition real opportunities are present within the organisation as a whole.

You will work in a team developing or supporting one of the services offered which include G3 and VME/B with the emphasis on telecommunications. Further services are planned for the immediate future to meet the organisations aim to be at the forefront of technology. Salary will reflect experience but will not be less than £5,000 p.a., with exceptional candidates earning up to £9,000 p.a.

Ideally you should have experience in one of the following areas:

- **Senior operations on a large ICL system**
- **Support of a large comms network**
- **PLAN programming**
- **VME/B or G3 support**
- **JCL or SCL writing**

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PROJECT LEADER

(Salary up to £7,230 p.a. inclusive of supplement)

SENIOR DEVELOPMENT OFFICER

(Salary up to £6,080 p.a. inclusive of supplement)

The City Council plans to install a 2½ megabyte ICL 2960 Computer in October 1979 to replace an ICL 1904S Computer running under George III. An ambitious conversion and development programme of work is planned with an emphasis on communication and data management software.

Applicants for the position of Project Leader should have at least two years' relevant data processing experience, two of which should have been in a senior systems capacity, and for the position of Senior Development Officer, a minimum of three years' relevant data processing experience.

A salary award is expected to be applied from 1st July 1979 and the City Council offers an attractive relocation package which includes 100% removal expenses, reimbursement of legal fees, temporary lodging allowance, furniture storage expenses, incidental expenses and mortgage facilities in appropriate circumstances.

Application forms are available from the City Treasurer, Civic Centre, Newcastle-upon-Tyne NE99 1RD, and should be returned by 15th June, 1979.

For further details ring Mr. A. Maughan on Newcastle 2852D, extension 310.

City of Newcastle upon Tyne

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Our client, the Ministry of P.T.T. Riyadh, urgently requires following personnel for IBM 3031 computers:

- **SYSTEMS ANALYSTS £27K P.A.** Min 5 yrs.' exp. in computer systems work
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Please ring 01-801 4321, Shaikh-Hashem Overseas Personnel Ltd., 6 Welton Road, London N16 4PP

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Data Logic's Terminal Systems Division is one of Europe's leading suppliers of intelligent terminals and distributed processing systems. Our users come from government, industry and commerce. We are engaged in an ambitious expansion programme aimed at more than doubling turnover in the next five years. This will create extremely attractive prospects for career progression.

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Candidates should have an aptitude for computing as well as a recognised teaching qualification or relevant training experience. They are likely to be engaged currently in a teaching position in higher education or in a training role with a mainframe or minicomputer manufacturer.

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Data Logic

Write or call quoting reference TS/04:
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29 Marylebone Road
London NW1
01-486 7288

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Starting salary dependent on age and experience. Company benefits include contributory pension scheme, four weeks' holiday, subsidised staff restaurant, company shop, social club and interest-free season ticket scheme (after six months).

Please write or telephone for an application form:
Miss Elizabeth Pingstone, Staff Department,
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Blackfriars, London EC4P 4BQ.
01-822 6157.

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School of Engineering and Science
TEMPORARY (FULL-TIME) LECTURERS IN COMPUTING
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As a consequence of our expanding commitment to education in all aspects of computing and digital electronics we are seeking additional lecturers to join our developing activities in these areas.

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Salary in the range £5614 to £9053 (currently under review).

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Mrs. D. Townsend, Personnel Department, UKAEA
Culham Laboratory
Abingdon, Oxon OX14 3DB

or telephone 0235 21840, ext. 250

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REDIFON PROGRAMMERS

A software company wishes to compile a list of currently active freelance programmers in Southern England.

Reply in confidence to Box 1022, Computer Weekly.

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Opportunities in Advanced Software Development

We are Europe's leading manufacturer of Automatic Test Equipment (ATE). Our continuing growth means that we now have a number of opportunities for you to join our young and expanding Software team, using advanced structural development techniques for design and implementation of ATE Software.

The team is now preparing further additions to the MB7700 range of ATE based on our own in-house micro-processor controller. The work includes:-

* High-level language compilers
* Automatic program generation
* Advanced fault diagnosis algorithms
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We are located in an attractive part of Dorset, with realistic house prices, close to Bournemouth and the New Forest.

We offer excellent starting salaries, depending on experience. Other benefits include a profit-sharing scheme, flexible working hours, four weeks annual holiday and, where appropriate, generous assistance to help you relocate to this area.

Telephone Steve Thurlow on Ferndown 893535, or, alternatively write sending details of your qualifications, experience and salary expectations - START ON A MEMBRAIN PROGRAM TODAY.

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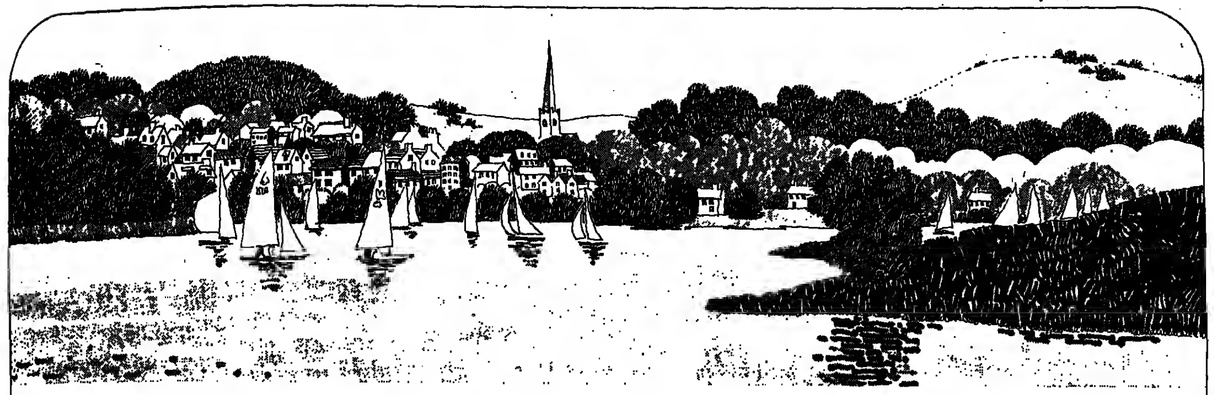

Move into a new computer world with Halfords

It is unlikely that you will find a better offer in computers this year!

Not only will you have the rare experience of moving in on a new ICL 2950 installation and playing a key role in the design and implementation of a completely new programme: You will also be in a prime position to advance your career and your promotion prospects as our ambitious development plans unfold.

But that's only part of the story.

Our offices are located at Redditch in the heart of the beautiful Worcestershire and Warwickshire countryside. Housing is cheaper than in Southern England and we will give you a generous relocation allowance into the bargain.

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You will be working for the leading retailer in Europe specialising in the motoring, cycling and leisure markets.

Apart from our 350 retail outlets, other Halfords interests cover wholesale cash and carry warehouses for motor accessories, our own cycle manufacturing plant, a cycle accessory wholesalers and a retailing chain in Holland.

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The challenge presented by the unique problems encountered within our retailing outlets will tax the ingenuity of the successful applicants and test the capability of our 2950.

That's why we're looking for the most experienced people in the field to join us at Redditch.

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HALFORDS LIMITED
Mr. L. T. Richards,
Halfords Limited,
Icknield Street Drive, Washford West,
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Burlington Industries (Ireland) Ltd. a subsidiary of Burlington Industries Inc., a major textile company has vacancies at its Gillogo plant, near Limerick city, southern Ireland for:

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£6,000 + p.e.

The successful candidates will be experienced in at least one of the following languages: RPG 11, Cobol, Assembler.

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The company offers a challenging career with the prospect for further advancement.

Relocation expenses will be paid where appropriate.

Please telephone Lyn Thorne, Personnel of London 734 8242 or send written application to:

Mr. Lyn Thorne,
Personnel Manager,
Burlington International A.G.,
Regent Arcade House,
18/28 Argyll Street,
London W1V 1AA.

Closing date 19 June 1979.

Burlington Industries (Ireland) Limited

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Computer Operator
South Wales

Inco Europe Limited is part of a multi-national Company employing over 52,000 people throughout the World, and operates a modern nickel refinery at Clydach, near Swansea, South Wales.

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Salary will be competitive and other benefits include a non-contributory Pension and Life Cover Plan.

Please write or telephone for an application form to:

David Thomas,
Senior Personnel Officer,
Inco Europe Limited,
Clydach Refinery, Clydach,
Swansea (Tel. Clydach 842501).

INCO EUROPE LIMITED

Senior Systems Analysts:
Let's get straight to the point in Wembley

If you've had at least four years experience of business systems development, we want to talk to you. Because you are one of the people who can help us to develop sales order and billing systems for our European network. It's a large scale operation based on IBM equipment.

Join us in London and you'll be with a major international group whose widely diversified interests are in chemical, natural resources and consumer products. More important to you, our broad spread of activities – and our continuing expansion – is a virtual guarantee of attractive opportunities now and in the future. We'll be depending on creative men and women to keep pace with our growth.

Rewards for Senior Systems Analysts include excellent salaries, top line benefits, European travel and a great deal more. For all the details, in confidence, phone or write to Keith James, Data Processing Manager, W. R. Grace Ltd., Northdale House, North Circular Road, London, NW10 7UH. Tel: 01-965 0611.

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Message switching staff – Holland
Data comms./emulator staff – Germany
COBOL Programmer – Denmark
RPGII COBOL – London
Aeronautical Engineer Programmers – Germany

Initial interviews will be held in London during June.

POSITION	SALARY	EMPLOYER	LOCATION	HARDWARE ENVIRONMENT	SOME OF THE QUALIFICATIONS	REF. NO.
Perm/Cont Programmers	Neg	Systems/ Software house	North London/ City	IBM Sys 3.32	RPGII Programmers urgently required to work on the development of financial/commercial applications.	Ref 22/1
Analyst/ Programmers Analysts	from £6,000 + Mort.	Banking/ Insurance	Essex/London	IBM	Leaders in the insurance/banking fields need professional staff to develop/support advance systems using T.P. facilities	Ref 22/2
Systems Analysts/ Programmers	to £8,000 + Car	Building materials	Middx.	ICL 1900 Series GO + Minis	3 years + experience required for these senior positions. First class opportunities for both Analysts and Programmers to develop a wide range of applications in a challenging environment	Ref 22/3
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IBM Systems Programmers	Al Neg	Software Houses	Europe	IBM OS	ISM OS Systems Programmers urgently required by clients throughout western Europe. Salary and conditions of employment are excellent	Ref 22/6
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Systems Analysts	cE7,000	Software House	Central London	Minis/Mircas	At least 5 years+ experience required with in-depth knowledge of assembly code. Familiarity with communications an advantage	Ref 22/8
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INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX
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We have become one of the largest Dec OEMs in the country and are looking for people with experience in the minicomputer field – preferably on Dec Equipment.

In the first instance contact Stephanie Worboys on Little Chalfont (02404 4466) or write to the Field Service Manager, Bunzl Data Systems Limited, Meteor House, White Lion Road, Amersham, Bucks.

bunzl

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We have a number of urgent requirements for computer personnel in the U.S.A. Most of the assignments are centred in the Mid-West and Southeastern areas of the U.S.A. and are for a period of 12 months.

We would like to hear from programmers with 2-4 years' experience of IBM OS, IMS, COBOL and TSO.

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Sound experience in Application Programming is essential. Previous analytical experience advantage. Applicant to be responsible for the department's IBM CALL Terminal and development of timesharing applications/systems reporting. Training will be given.

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Fraser Williams Computer Consultants

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DEPARTMENT OF MATHEMATICS AND COMPUTER STUDIES

As a result of an expansion of the Department's degree and diploma teaching commitments applications are invited for the following posts:

A) SENIOR LECTURESHIP/ LECTURESHIP IN COMPUTING

The successful applicant will have an active interest and proven research record in one or more of the following areas: Computer Science, Systems Software, Computer Architecture and Microcomputers. For the senior lectureship level he/she should also possess substantial experience in teaching and of course design and validation procedures.

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The successful applicant will be well qualified in computing or computer science and have commercial computer experience in systems analysis and design.

Salary Scales:
(presently under review)
SENIOR LECTURESHIP—£7155-£7962 (BAR)—£8040
LECTURESHIP—£4056-£7167 (BAR) £7995

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, DD1 1HG, with whom applications should be lodged by 15th June, 1979.

SYSTEMS PROGRAMMERS
UP TO £5394

Vacancies exist in our Technical Support Team for Systems Programmers to assist in the creation, maintenance and development of VME/B (including T.P. and MAC) and System 4J level, running on our ICL 2960.

These vacancies provide the opportunity for Junior Systems Programmers to develop their career and for suitably experienced applications programmers to widen their horizons by moving into this specialist and demanding field.

Application form from the Chief Executive, 50 Woolwich New Road, London SE18 6HQ (Tel. 01-854 8888, Ext. 2034).

Closing date: 15th June, 1979.

The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

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£10K+ APPOINTMENTS

pages begin June 7

Ring Eddie Farrell
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PROJECT LEADER/SENIOR SYSTEMS ANALYST — c. £8,500 + benefits
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THE PERSONNEL MANAGER, ORION BANK LIMITED, 1 LONDON WALL, LONDON EC2Y 5JX TEL: 01-600 6222

ORION

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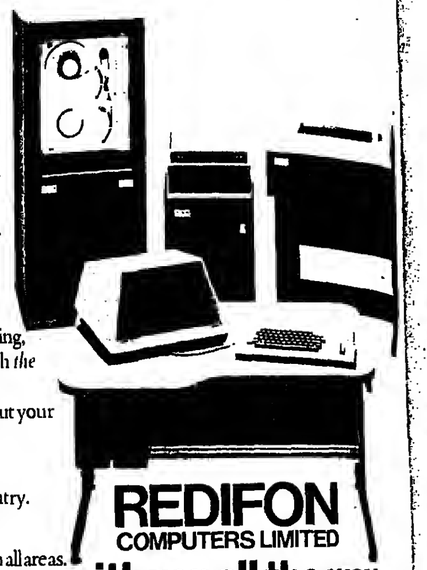

Redifon Computers, the second largest British-owned Computer manufacturer, is starting a major new expansion programme. This will complement an existing programme that has led to eightfold growth in the last five years.

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2 years' successful experience selling computers?
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Don't miss this opportunity to talk about your future. Call today:

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George Snelgrove. Tel: 061-436 4114.
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Member Company of the Rediffusion Organisation

Our clients are a Swiss and U.K. based Data Communications Manufacturer. Their products are in the forefront of technology and they are enjoying substantial success in the OEM and End User Sectors.

The successful candidate operating out of their head office in the Bracknell area will take responsibility for the U.K., selling the most sophisticated range of computer and communications test equipment currently available and will be competent in dealing with all levels of commercial and technical management in this rapidly expanding market.

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Base salary to £7,000 on quota earnings £14K to £16K plus company car of your choice in the 2-litre class. Free private patients plan for you and your family. Non-contributory pension scheme and bonus.

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Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

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Working on one of Europe's key avionics projects, our client has achieved a better balance - a good 60% of thought with only 25% documentation, and a mere 15% coding.

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A job like one of these, perhaps.

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Your section would be one of several working on systems that will simulate the systems operating environment, and your people would handle technical design of specific parts of the system, working to very tight requirement specifications.

The man or woman our client is looking for will have at least three years' experience in mind-based real-time systems for scientific applications, for example, message switching or communications. Although your technical expertise is an important qualification, this is a job that will also test your man management ability.

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If you're a man or woman with at least a year's practical experience in real-time systems for scientific applications, and experience in a high level language or Assembler, you could step straight into an active, thinking role in one of our systems teams.

If you want to use your brain to the full, in a company where the rewards and the promotion opportunities come in full measure, write in Position Number BWM 7330, Austin Knight Limited, London W1A 1DS.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter in the Position Number Supervisor.

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In addition to an excellent training programme which could lead to formal qualifications if desired, the company will be providing you with an ideal opportunity to develop your skills both inside and outside a data processing environment performing a consultancy function for international management. Excellent long term prospects exist to diversify into other areas of the company's business — a sound base from which to progress to senior management.

In addition to the excellent starting salary, benefits are in line with those normally offered by a large and successful multi national company.

Please telephone or write in the first instance to Graham Morgan ACA or Barry Latchford quoting Ref. 2388

Lloyd Chapman Associates
123, New Bond Street London W1Y0HR 01-408 1670

The International Systems Division of American Express, based in Brighton is seeking experienced

Burroughs Operators

for its B1860 B1865 which is used to support systems development and production both utilising online facilities.

Successful candidates will have upwards of 12 months experience on a Burroughs computer and be prepared to work on a 5 day, 2 shift system.

Write, giving brief details or phone for an application form.

Dennis Perfrement,
Central Personnel Department,
Amex House, Edward Street,
Brighton BN2 2LP.
Phone Brighton 693555 ext 6512.

AMERICAN EXPRESS

County of Cleveland

COMPUTER SERVICES UNIT

SENIOR PROJECT LEADER
PROJECT LEADERS UP TO £6,500

The Unit provides a cost effective means of helping user departments optimise both functional efficiency and production economy. We have a few openings for people with systems experience to work in project design and implementation.

The Computer unit provides a wide range of services ranging from finance in computer aided design. We are currently seeking to fill three new posts in systems design, created by expanding work loads on our IBM mainframes.

SENIOR PROJECT LEADER
£8,665-£9,613 (includes supplement)

This is a senior position requiring a mature approach. You will be required to lead, train and advise staff in system design, for commercial systems. You will also take a lead in shaping the Council's teleprocessing systems and data bases. Ref. CC.093/CW.

PROJECT LEADERS
£8,232-£8,988 (includes supplement)

Two posts have been created for Project Leaders. You will lead small teams engaged in commercial applications. You will be required to demonstrate original ideas, in areas of computing requiring high throughput efficiency. You will be responsible for systems design and implementation of systems utilising database and advanced teleprocessing techniques. Refs. CC.094/5/CW

All these vacancies are involved in the Council's development plans, and the prospects for career advancement and job satisfaction are good. The installation is using CICS/VS, ANS COBOL and commercial enquiry packages.

Cleveland County has a population of 566,000. It is an area of contrasts. Within close proximity to the main centre is an outstanding coastline and the North Yorkshire Moors. The Computer Unit combines all the advantages of a small organisation with the benefits of a large company. In addition to our competitive salary, we offer the usual excellent public service conditions of service including 27 days holiday and restaurant facilities. Reimbursement for the removal of household effects is paid in approved cases. Temporary housing accommodation may be available.

For further information and application forms please ring Tony Whitehead on Middlesbrough (0642) 246156 ext. 2360. Alternatively write to Colin Schneider, 5th Floor, Rede House, 67 Corporation Road, Middlesbrough TS1 1LY. Please quote the appropriate reference.

ADP

LOOKING FOR VARIETY AND CHALLENGE? BASED IN [OR CLOSE TO] MANCHESTER?

You will be involved at all levels, especially senior, in all kinds of organisations and with a wide range of disciplines.

You will be active in a wide variety of computing applications in both the private and public sectors.

You will be responsible for controlling the development of powerful and well designed systems for improved management control.

ADP Network Services is an international company providing interactive computing services for managers and businessmen.

We believe in accessible management and promotion from within. We are always prepared to recognise and reward self-motivated individuals.

We provide a professional development approach for our customers and expect our staff to demonstrate their abilities and experience.

The kind of people we need will have experience of:

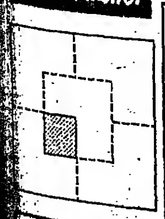
ANALYSIS, DESIGN AND IMPLEMENTATION

You must be able to conduct the installation of a customer's system from the pre-sales stage through to the commencement of live running and be able to lead other members of project teams.

Education to 'A' level standard is generally expected together with the capacity for hard work and applications in tough situations coupled with a sensitivity to the requirements of others.

Ring: **Bernard Edwards 01-580 3715** or write: **Bernard Edwards, S & P Manager, ADP Network Services Limited, 2nd Floor, Peter House, St. Peter's Square, Oxford Street, Manchester M1 5AQ.**

Puzzle Answer



Trader is now on holiday. This column will be resumed next [illegible]

COURSES

CITY OF LONDON POLYTECHNIC

Profit and loss accounts, balance sheets, corporate taxation, group accounts, funds flow statements . . . ??

If these are things you need to know something about, then we have just the thing for you—

A two-day Introductory course to Financial Accounting July 2 and 3, 1979

For further details phone Ellen Johnston, Short Course Unit, [illegible] Telephone Kettering 81393.

ESSEX
HARLOW TECHNICAL COLLEGE
College Gate, The High Harlow (Tel: Harlow 20131)
DEPARTMENT OF MATHEMATICS AND SCIENCE

LECTURER GRADE I in MATHEMATICS and COMPUTING

Applications are invited from suitably qualified candidates for the above post tenable from September 1979. The lecturer is required to teach mathematics for GCE 'O' level and HEC in Engineering courses, together with computing for the City and Guilds 747 Certificate. Recent experience in the field of computing is desirable.
Salary Scale. £3,182-£5,334 plus £159 London Weighting.
Application form and further details obtainable from the Principal.

D.P. MANAGER

West Yorkshire

I AM A DISTRIBUTOR WITH A SMALL PDP 11 installation which will soon be unable to keep pace with the Company's rapid expension. I would like to develop a larger real time system with terminals at each of my branches, and I would like to meet an experienced Systems Analyst/Programmer who is looking for a career in management. Starting salary would be negotiable at £6,000 plus and the package will include a company car and other fringe benefits.

If the idea of developing and managing your own thing appeals to you please write to: Box 1029, Computer Weekly, giving details of your career to date.

TRESHAM COLLEGE
NORTHAMPTONSHIRE

LECTURER II
COMPUTING AND DATA PROCESSING

Required from 1st September 1979 or as soon as possible thereafter to act as course tutor for the National Computing Centre "Threshold" courses and have overall responsibility for computing at the Corby Centre. Appropriate industrial experience essential; teaching experience preferable.

Salary in accordance with BURNHAM FE Lecturer II scale £4101-£5585 (under review), point of entry determined by experience and qualifications.

Further details and an application form from The Principal, Tresham College, Kingswood, Kettering, Northants NN15 6ER. Telephone Kettering 81393.

FREELANCE PROGRAMMERS
£200 to £400 p.w.
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Please contact Willmotts. 01-743 4444 Ref. TMHM for further details